DOCUMENT RESUME

ED 120 655 CG 010 489

TITLE	Polydrug Use: An Annotated Bibliography. National Clearinghouse for Drug Abuse Information Special Bibliographies, No. 3, June 1973.
INSTITUTION	National Inst. on Drug Abuse (DHEW/PHS), Rockville, Md. National Clearinghouse for Drug Abuse Information.; Student Association for the Study of Hallucinogens, Biloit, Wis.
REPORT NO	DHEW-ADM-75-225
PUB DATE	Jun 75
NOTE	40p.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
EDRS PRICE	MF-$0.83 HC-$2.06 Plus Postage
DESCRIPTORS	*Alcohol Education; *Annotated Bibliographies; Data Bases; Drinking; *Drug Abuse; *Drug Education; Literature Reviews; Marihuana; *Narcotics

ABSTRACT

Although most discussions of mood-altering drugs and patterns of use typically focus on a single drug or particular drug class, it is a widely acknowledged fact that the majority of drug users, from the junior high school experimenter to the hard-core narcotic addict, employ more than one legal or illegal substance to alter their subjective states. Multiple drug use has been documented by epidemiological investigations among several major population groups including: students, housewives, military personnel, doctors, alcoholics, and narcotic addicts. Patterns of multiple drug use are invariably complex but can generally be broken doen into three major categories: (1) the use of combinations of drugs; (2) the concomitant use of separate drugs; and (3) the consecutive or sequential use of two or more substances in an alternating fashion. Multiple drug-use patterns can be considered in light of the pharmacological classes of the drugs involved. Some users, for example, restrict their drug taking to particular types of substances, such as depressant drugs (alcohol, sedative-hypnotics, minor tranquilizers, and narcotics), or stimulant drugs (amphetamines and cocaine), or hallucinogens (including cannabis, LSD, mescaline, and related substances). Other users mix not only individual drugs but pharmacological classes of drugs as well. Because an overwhelming number of articles written on particular drug-using patterns mention, at least in passing, the predominance of multiple drug use, items were selected for inclusion in this guide only if they treated the phenomenon of polydrug use exclusively or as a major point of focus. (Author)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED120655

C 4

Polydrug Use

SPECIAL BIBLIOGRAPHIES

JUNE 1975 NO. 3

NATIONAL CLEARINGHOUSE FOR DRUG ABUSE INFORMATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

CG010489

The National Clearinghouse for Drug Abuse Information, operated by the National Institute on Drug Abuse on behalf of the Special Action Office for Drug Abuse Prevention and the Federal agencies engaged in drug abuse education programs, is the focal point for Federal information on drug abuse. The Clearinghouse distributes publications and refers specialized and technical inquiries to Federal, State, local, and private information resources. Inquiries should be directed to the National Clearinghouse for Drug Abuse Information, P.O. Box 1908, Rockville, Maryland 20850.

AUDIENCE: Technical

The National Clearinghouse for Drug Abuse Information should be contacted for advice and assistance in the reproduction of this report if any modifications in content or layout are planned.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

NATIONAL CLEARINGHOUSE FOR DRUG ABUSE INFORMATION

POLYDRUG USE: AN ANNOTATED BIBLIOGRAPHY

4

National Institute on Drug Abuse
11400 Rockville Pike
Rockville, Maryland 20852

This bibliography was prepared for publication by the Student Association for the Study of Hallucinogens (STASH), 118 South Bedford Street, Madison, Wisconsin 53703, under Contract No. HSM-42-73-216.

DHEW Publication No. (ADM) 75-225
Printed 1975

CONTENTS

Page No.	Citation No.	
1		Introduction
5	1-5	General Articles
6	6-17	Epidemiology of Polydrug Use
10	18-24	Management of Polydrug Use
12	25-29	Alcohol and Polydrug Use
14	30-41	Cannabis and Polydrug Use
17	42-43	Hallucinogens and Polydrug Use
18	44-52	Methadone and Polydrug Use
21	53-57	Methadone-Alcohol Polydrug Use
23	58-67	Narcotics and Polydrug Use
26	68-74	Narcotics-Alcohol Polydrug Use
29	75-83	Narcotics-Sedatives Polydrug Use
31	84-85	Sedatives and Polydrug Use
32	86-88	Stimulants and Polydrug Use
35		Author Index

INTRODUCTION

Although most discussions of mood-altering drugs and patterns of use typically focus on a single drug or particular drug class, it is a widely acknowledged fact that the majority of drug users, from the junior high school experimenter to the hard-core narcotic addict, employ more than one legal or illegal substance to alter their subjective states. Multiple drug use has been documented by epidemiological investigations among several major population groups including: students, housewives, military personnel, doctors, alcoholics, and narcotic addicts.

Patterns of multiple drug use are invariably complex but can generally be broken down into three major categories: (1) the use of combinations of drugs; (2) the concomitant use of separate drugs; and (3) the consecutive or sequential use of two or more substances in an alternating fashion. Multiple drug-using patterns can also be considered in light of the pharmacological classes of the drugs involved. Some users, for example, restrict their drug taking to particular types of substances, such as depressant drugs (alcohol, sedative-hypnotics, minor tranquilizers, and narcotics), or stimulant drugs (amphetamines and cocaine), or hallucinogens (including cannabis, LSD, mescaline, and related substances). Other users mix not only individual drugs but pharmacological classes of drugs as well.

Typical examples of multiple drug use of the combination type include the taking of amphetamine-barbiturate mixtures such as Dexamyl, or other ethical pharmaceutical fixed-drug preparations of minor tranquilizers, as well as the self-administration of illicit mixtures such as opium–suffused marihuana, or the "speedball" combination of heroin and cocaine. Multiple drug use of this type may also be an unintended consequence of the poor quality of most street drugs, which contain additives, impurities, and substitutions often resulting in unknown combinations which users may mistake for single drugs.

The concomitant self-administration of two or more separate substances is typically undertaken by the user in order to produce a desired pharmacological interaction. Many methaqualone users, for example, are

known to prefer the use of the drug in combination with alcohol, a procedure called "luding out," because the depressant actions of both compounds enhance each other and produce a drowsy, dreamlike state. Similarly, LSD and mescaline devotees occasionally employ amphetamines in order to enhance the "rush" and other peak effects of the psychedelics. In contrast, drugs of opposing pharmacological classes are often used concomitantly to blunt each other's effects. One of the most common examples of this type of concomitant multiple drug use is the chronic amphetamine user who augments his stimulant intake with barbiturates or other sedative-hypnotics in order to counter amphetamine-induced restlessness, insomnia, and excitation. Similarly, heroin is sometimes used along with cocaine in an effort to "take the edge off" the powerful CNS stimulation produced by the latter compound.

Sequential use of different substances is frequently undertaken to regulate the time span of a particular drug-induced state. For example, the user who takes amphetamines frequently in the morning to produce alertness and increased feelings of energy and capacity to perform work often finds a need for barbiturates in the evening to permit sleep. In turn, the barbiturates may make the user feel sluggish and drowsy the next morning, with the result that amphetamines are again taken. A cycle of upper-downer use is often entered into in this manner; this cycle is intrinsically self-reinforcing and may be exceedingly difficult to break. Among other multiple drug users, cycles involving cocaine and minor tranquilizers, such as diazepam and chlordiazepoxide, develop in a similar manner.

Sequential and/or concomitant multiple drug use may often be the result of a scarcity on the illicit market of the user's drug of choice. In this pattern, narcotics addicts frequently resort to heavy use of sedative-hypnotics and/or alcohol in an attempt to alleviate withdrawal symptoms when heroin becomes unobtainable. Once heroin becomes available again, however, the sequential use of depressants is often curtailed or abandoned until the next shortage. Some multiple drug users of this type, though, inevitably become dually addicted to both heroin and sedative-hypnotics.

A related pattern of sequential multiple drug use among cannabis users was documented by McGlothlin and his colleagues (1970). In October 1969, after Operation Intercept had exerted a significant suppressive effect on the illicit cannabis market, these researchers found that at least 75 percent of the marihuana users they interviewed had increased their consumption of other drugs. Because of the widespread unavailability of cannabis, these 75 percent increased use of one or more of the following substitute drugs, in order of preference: alcohol, sedatives, stimulants, LSD, other strong psychedelics, opiates, and cocaine.

Because multiple drug use often develops as a consequence of a reduction of access to an individual's drug of choice, some planners believe that strategies of intervention in the illicit drug market should be evaluated with caution. From a public health standpoint, efforts to restrict the availability of less dangerous drugs (such as marihuana in the case of Operation Intercept) may, for example, ultimately prove to be counterproductive if they contribute to the proliferation of more dangerous patterns of multiple drug abuse.

Multiple drug use has also been shown to be remarkably widespread among another group of drug dependent individuals who have, by pharmacological rather than law-enforcement techniques, been denied access to their drug of choice. This group includes heroin addicts enrolled in methadone maintenance or narcotic-antagonist treatment programs. High-dose methadone maintenance produces a well-documented cross-tolerance which blocks the euphoric actions of heroin; similarly, narcotic antagonists, such as naloxone, cyclazocine, and naltrexone, prevent for varying lengths of time any subjective effects of self-injected heroin. In many cases, alcoholism and sedative-hypnotic addiction develop in heroin addicts after they have entered treatment programs at a point when, stabilized on methadone (or an antagonist), they no longer can achieve any pleasure from narcotic drug use.

Multiple drug abuse involving alcohol, sedative-hypnotics, and cocaine has been viewed by many clinicians as the most prevalent and serious complication of methadone-maintenance therapy. The pattern of polydrug abuse seen frequently among methadone maintenance patients presents serious problems because: (1) multiple drug users, as a group, are notoriously more resistant to most known treatment modalities, have a higher prevalence of complications, and share a poorer prognosis than single drug users; (2) in cases of addiction to barbiturates or alcohol, withdrawal is much more life-threatening and difficult to manage than is withdrawal from heroin; and (3) the likelihood of death from overdose is considerably increased when sedative-hypnotics and/or alcohol are taken in combination with methadone or other narcotics.

In this regard, many researchers and policy makers have called for a critical reexamination of strategies and goals in this country's overall efforts to control drug dependence. Some, for example, have expressed concern that the endorsement by the Federal Government of the methadone maintenance treatment modality may be encouraging the development of a dangerous pattern of polydrug dependence on alcohol and sedative-hypnotics. Others, going one step further, have advocated experimental trials of heroin maintenance as an alternative form of therapy which might not encourage the development of polydrug abuse. However, the experience of heroin maintenance clinics in Great Britain during the last several years does not lend much support to this hypothesis. The British clinics have reported a high incidence of multiple drug use among their patients.

Design of the Bibliography

A major activity of the National Clearinghouse for Drug Abuse Information is the development of publications designed to respond to recurring requests for information from the public on various drug abuse topics.

In order to anticipate the growth of new topics, the Clearinghouse has established an alerting system utilizing contacts in drug programs and on college campuses, and other resources to identify new trends in the field and to have publications ready for distribution by the time the topic has come to national attention.

Because an overwhelming number of articles written on particular drug-using patterns mention, at least in passing, the predominance of multiple drug use, items were selected for inclusion in this guide only if they treated the phenomenon of polydrug use exclusively or as a major point of focus.

The following data bases were utilized in assembling citations for this bibliography: The computerized data base of the National Clearinghouse for Drug Abuse Information, the STASH Library, the MEDLARS data base of the National Library of Medicine (1966 to present), the ***Science Citation Index, Index Medicus, Psychological Abstracts, SPEED: The Current Index to the Drug Abuse Literature,*** and the ***Drug Abuse Current Awareness System (DACAS)*** of the National Clearinghouse for Drug Abuse Information.

The coverage in this bibliography is by no means totally comprehensive; but an attempt was made to include as much of the recent literature as possible. The Clearinghouse is interested in updating its publications and would welcome any additional citations relevant to this subject. Any comments and criticisms on the usefulness of this publication are welcome.

The original articles cited in this publication are not available from the Clearinghouse, but may be obtained from local universities, medical libraries, or the STASH Library, 118 South Bedford Street, Madison, Wisconsin 53703.

GENERAL ARTICLES

1. **Bartholomew, Allen A. Four cases of progressive drug abuse.** *Medical Journal of Australia,* 1:653-657, April 1, 1967.

The interactions of various drug-using patterns are described in four case reports of prisoners from New South Wales, Australia. Concomitant use of methylphenidate, benzedrine, barbiturates, cannabis, cocaine, morphine, and morning glory seeds characterized the author's first patient, a 19-year-old male emigrant from Lithuania. A second youth, also 19 years of age, admitted to self-administration of alcohol, methedrine, cannabis, barbiturates, amphetamine-barbiturate combinations, cocaine, and opium. Although very intelligent, this subject was characterized as very irresponsible and erratic in his behavior. The drug-using history of the third case was essentially limited to sequential and concurrent involvement with alcohol and opium; this patient displayed marked delirium tremens shortly after incarceration. The fourth man in this group displayed a pattern of primary dependence upon amphetamines and barbiturates with supplementary use of cannabis, alcohol, and narcotic distillates of cough preparations, which were self-injected. The criminal behavior of all these men included the following types of offenses: (1) possession of dangerous drugs; (2) insufficient means of support; (3) breaking and entering; and (4) larceny. (13 references)

2. **Freedman, Alfred M., and Brotman, Richard E. Multiple drug use among teenagers: Plans for action—research.** In: Wittenborn, J.R.; Brill, H.; Smith, J.P.; and Wittenborn, S.A., eds. *Drugs and Youth. Proceedings of the Rutgers Symposium on Drug Abuse.* Springfield, Ill.: Charles C Thomas, 1969. pp. 335-344.

During the postwar period, the United States has experienced marked changes in drug-using patterns, including a rise in heroin use, diffusion of drug taking patterns from the central ghetto to the more affluent suburbs, a proliferation of mixed-drug use and significant involvement with mind altering substances on the part of students. To explore these developments, the authors studied the drug-using patterns of youths of varying ages and social classes in the New York City area. A high level of multiple drug use was found to characterize these youths; heroin use, however, was conspicuous by its absence. The involvement of the subjects of the study with mind-altering drugs was, on the whole, limited to cannabis, amphetamines, hallucinogens, commercial solvents, and alcohol. When compared to their peers who had no experience with psychoactive drugs, the multi-drug-using youths were less involved with family and school, less concerned with sports and traditional social activities, and more interested in aesthetic and cultural activities. The drug users, in addition, showed more concern about, and involvement in, civil rights and anti-war activities. The authors hypothesize that youthful drug use serves as an effective method of registering dissatisfaction with the general social structure in a highly visible fashion. (5 references)

3. **Kunnes, Richard. Poly-drug abuse: Drug companies and doctors.** *American Journal of Orthopsychiatry,* 43(4):530-532, July 1973.

The author asserts that, in recent years, a new form of polydrug abuse has emerged as a direct consequence of efforts by pharmaceutical companies to bolster their profits. One of the most lucrative methods of increasing financial return, the author charges, is the "discovery" and marketing of "new" combinations of old, standardized preparations. In the realm of psychoactive drugs, this technique has been employed with amphetamine-barbiturate combinations and fixed-drug combinations of different minor tranquilizers. While there is no evidence that these "new" pharmaceuticals are any more efficacious than combinations taken separately, the fixed-drug combinations cost the consumer far more than the sum of the individual components. Especially with respect to amphetamine-barbiturate mixtures sold as "effective" dieting agents, the author chastizes pharmaceutical manufacturers for the promotion of a new, and dangerous form of multiple drug abuse. In addition, drug manufacturing firms, through strong advertising campaigns to physicians, may be encouraging the over-prescription of addicting amphetamine-barbiturate combinations, with the result that increasing quantities of these drugs find their way to the street market. (2 references)

4. Lewis, Jarry M. The multiple drug user. *Texas Medicine,* 69(10):59-62, October 1973.

The author believes that, on the whole, the use of currently popular drugs by young people is casual, experimental, and infrequent. However, from this growing pool of young experimenters emerges a small subgroup (perhaps 2 to 5 percent) who go on to employ a wide variety of psychoactive drugs in a manner which often becomes a lifestyle adaptation. The etiology of this heavy multiple-drug abusing pattern is discussed in terms of four variables: (1) the chemical substances themselves; (2) the personality of the user; (3) the user's broader social and cultural environment; and (4) the fundamental human need for experiencing altered states of consciousness. Unfortunately, the author notes that the heavy multiple-drug abuser is very difficult to treat, and no methodologically sound published reports of successful treatment programs have appeared in the literature. It is suggested that treatment goals may need to be revised; abstinence may be an unrealistic criterion for a youth who must move about daily in a subcultural milieu which condones the use of mind-altering substances. In place of abstinence, the author suggests the elimination of heavy drug use accompanied by a recommencement of a "developmental process in the direction of autonomy and self determination with educational and vocational goals." It is the author's impression that such a change can and does occur without complete abstinence from mind-altering drugs, especially cannabis. (18 references)

5. Strategy Council on Drug Abuse. Drugs in Perspective—Context for National Action. Multiple drug use. In: *Strategy Council on Drug Abuse. Federal Strategy for Drug Abuse and Drug Traffic Prevention.* Washington, D.C.: U.S. Government Printing Office, 1974. pp. 9-10.

While it is convenient for the purposes of discussion to consider each of the primary drugs of abuse separately, most involved drug abusers use not one but several different drugs individually or in combination. Patterns of multiple drug abuse—also referred to as polydrug abuse—include either drug substitution or the use of several drugs simultaneously to attain a sequence of effects.

Substances being employed in multiple drug use patterns include alcohol, barbiturates and related depressants, amphetamines and similar stimulants, cocaine, volatile intoxicants, hallucinogens, tranquilizers, marihuana, hashish, and such opiates as heroin, morphine, and synthetic pain killers. This list includes most of the commonly used substances which affect human moods, emotions, and cycles of sleep and wakefulness. Changes in any of these states may or may not lead to visible impairment of human functions, but acute intoxication does appear to produce measurable and profound performance impairment, and severe overdose often results in death.

These patterns of multiple drug use make it more difficult to estimate the size of a given problem. While we may be able to estimate the number of abusers of each substance, the overall estimates are not necessarily conclusive, since a single individual may be counted in more than one group. We can say, however, that in the course of the past several years multiple drug abuse has remained a continuing and substantial problem. Given the widespread availability of many of the substances employed in multiple drug patterns—through both licit and illicit channels—the Federal Government is continuing to address the spread of multiple drug abuse through demonstration prevention activities and through law enforcement programs.

EPIDEMIOLOGY OF POLYDRUG USE

6. Abeles, Hans; Plew, Ralph; Laudeutshcer, Irving; and Rosenthal, Harvey M. Multiple-drug addiction in New York City in a selected population group. *Public Health Reports,* 81(8):685-690, August 1966.

The extent of multiple drug abuse was studied in the universe of narcotics addicts admitted to correctional institutions in New York City. Of the 1,239 narcotics addicts studied, slightly over half (N = 624) admitted to the use of more than one drug on a continuous basis; 101 of these commonly employed three or

more drugs. Women addicts were much more likely to use greater numbers of drugs sequentially and in combination. The most common multiple drug abuse pattern involved heroin and sedative-hypnotics (40 percent). Concomitant use of heroin and stimulants (amphetamines and/or cocaine) was admitted to by only 15 percent of those studied. The use of stimulants, however, was much more common among female narcotics addicts than among males. The frequency of multiple drug use was found to increase with age and with duration of experience with mind-altering drugs. Shortly after incarceration, most heroin users presented abstinence syndromes; many of these were, however, complicated by dependence upon barbiturates. (3 references)

7. **Backhouse, C.I., and James, I. Pierce. The relationship and prevalence of smoking, drinking and drug taking in (delinquent) adolescent boys.** *British Journal of Addiction,* 64:75-79, May 1969.

The drug and alcohol using patterns of 290 14- to 16-year-old boys confined to a detention center in Southeast England were examined in questionnaire based structured interviews. Over 80 percent of the boys studied admitted to use of tobacco; 29 percent were occasional alcohol users, 27 percent were frequent alcohol users, and 7 percent were excessive alcohol users. Thirty-one percent of the boys interviewed admitted to the use of dangerous drugs, including amphetamines, cannabis, barbiturates, heroin and cocaine. The majority of the drug users employed more than one substance. Positive correlations were also found between smoking, drinking, and drug use. The degree of multi-drug use among this population was found to exceed that found in the general population of male adolescents. (6 references)

8. **Carlin, Albert S., and Post, Robin D. Patterns of drug use among marihuana smokers.** *Journal of the American Medical Association,* 218(6):867-868, November 8, 1971.

As a part of a screening procedure for gathering subjects for an ongoing cannabis research project, the authors interviewed 106 male cannabis users concerning their use of other drugs. Initial contact with subjects was made via a newspaper advertisement and, therefore, the findings of this study cannot be generalized to the total cannabis-using population. The majority of respondents were students (60 percent), but the sample included working men (23 percent) and those who were unemployed or who had dropped out of school (17 percent). The vast majority (74 percent) of these cannabis users reported experience with stronger psychedelic drugs (most commonly LSD-25 and mescaline). Only 6 percent of those interviewed admitted to experimentation with heroin or morphine; most of those who did try narcotics, however, used them only once or twice. Twenty-seven percent of the sample disclosed that they had smoked opium on from 1 to 10 occasions; none of the opium users, however, felt that physiological or psychological dependence had developed as the result of such experimentation. Some 60 percent of those interviewed admitted the use of amphetamines, primarily to facilitate cramming for examinations at school. Forty-seven percent of the sample had used tranquilizers and 44 percent admitted to the use of barbiturates; the majority of tranquilizer and barbiturate users claimed to have used these substances for medical reasons. The authors conclude that, although cannabis users are more likely to use other drugs, there does not appear to be a tendency for them to graduate to dependence on more dangerous substances. (3 references)

9. **Cohen, M., and Klein, D.F. A measure of severity of multi-drug use among psychiatric patients.** *International Pharmacopsychiatry,* 6(2):83-91, 1971.

Based on interviews with over 100 drug-using psychiatric patients, the authors developed a method to measure the severity of multi-drug use which takes into consideration three basic criteria: (1) number of different drugs used; (2) frequency of use; and (3) length of involvement with drugs. The severity of drug use in any epidemiological investigation is taken to reflect each individual's degree of rejection of social roles and willingness to engage in illegal practices, as well as the possibility of habituation or dependence upon one or more drugs. Based on this epidemiological scoring system, an individual may be placed into one of three categories (mild, moderate, or heavy user). The scoring system takes into account patterns of use of all single drugs, as well as combinations of different drugs. The results of the scoring system, when applied to the original cohort of 117 subjects, yielded the following groupings for drug abuse severity by sex: 22 percent of all subjects were placed in the mild category, 38 percent in the moderate category, and 40 percent in the heavy

category; there were more females in the moderate group and more males in the heavy group. (4 references)

10. **Dodson, W. Edwin; Alexander, Duane F.; Wright, Peter F.; and Wunderlich, Richard A. Pattern of multiple drug abuse among adolescents referred by a juvenile court.** *Pediatrics,* 47(6):1033-1036, June 1971.

Thirty-five suburban youths (26 males, 9 females), referred to an experimental drug education and rehabilitation program in Prince George's County, Maryland, were interviewed to ascertain the degree of their involvement with illegal drugs. Contrary to assumptions prevalent in the community at the time, these youngsters admitted to extensive experience with a wide range of substances. Multiple drug abuse was by far the rule, with the majority of youths having used drugs from at least four of the following categories: cannabis, stimulants, alcohol, major hallucinogens, hypnotics and sedatives, tranquilizers and narcotics. In general, the adolescents interviewed admitted to the use of almost any drug available to them on the illicit market, although in a few cases clear preferences were apparent. There was an abnormally high incidence of neuropsychiatric disorders in this group of subjects; 17 patients were referred for psychiatric evaluation and all of these received a clinical diagnosis. (7 references)

11. **Judd, Lewis L., and Mandell, Arnold J. A free clinic patient population and drug use patterns.** *American Journal of Psychiatry,* 128(10): 1298-1302, April 1972.

In an effort to describe the patient population at the Crisis Center free clinic in San Diego, a 50-item questionnaire was distributed in an anonymous and confidential fashion to 94 consecutive individuals who presented themselves for treatment on three consecutive nights. Although the clinic was located in a black-brown section of the city, most of the clientele consisted of middle-class white youths. Ninety-three percent of those responding indicated use of illegal drugs. The total number of illicit drugs that the group had tried ranged from none to 16, with a mean of 5.6, indicating the predominance of a multi-drug-using pattern among these youths. Despite the high incidence of heavy and multiple drug usage, only 2.1 percent of those surveyed came to the clinic because of a drug-related problem. (3 references)

12. **Kramer, Janet Phillips. The adolescent addict. The progression of youth through the drug culture.** *Clinical Pediatrics,* 11(7):382-385, July 1972.

Questionnaires designed to elicit data on drug-using patterns were distributed to 50 patients at a hospital-based drug addiction treatment program in Wilmington, Delaware. Of the 47 usable returned questionnaires, 19 were from individuals over 20 years of age, and 28 were from teenagers. Fifty-three percent of these relatively new addicts were middle-class youths, about 10 percent were female, and 45 percent were white. All of the respondents admitted to chronic heroin use in addition to a variety of other substances, including: commercial solvents, amphetamines, barbiturates, cannabis, and the stronger hallucinogens. Of the total of 47 addicts, 13 have had physician-documented cases of hepatitis. The incidence of hepatitis in this group was found to be strongly related to patterns of multiple drug abuse. The frequency of use of various substances for this group was: heroin, 100 percent; cannabis, 100 percent; hallucinogens, 93 percent; amphetamines, 89 percent; cocaine, 83 percent; barbiturates, 75 percent; and commercial solvents, 68 percent. Although the incidence of alcohol use was not measured, the author speculates that heavy drinking among these young multiple drug users seem to be mounting. (3 references)

13. **Mellinger, Glen D. The psychotherapeutic drug scene in San Francisco.** In: Blachly, P.H., ed. *Drug Abuse. Data and Debate.* Springfield, Ill.: Charles C Thomas, 1970. pp. 226-240.

Personal interviews designed to elicit the extent of use of various psychoactive substances were conducted with 1,104 individuals selected by strict probability sampling from the general adult population of San Francisco. Some 51 percent of the men interviewed, and 60 percent of the women studied, admitted to the use of some psychoactive drug; 33 percent of the men and 45 percent of the women had used such drugs during the year prior to the interview. Women were found to more frequently use prescription drugs, while men were more likely to employ over-the-counter preparations. Of the 634 respondents who admitted to the use of psychotropic drugs, most were likely to use more than one substance. The mean number of drugs used by each respondent was 2.7. Twenty-seven percent of the

prescription psychotropic drugs last used by respondents were obtained from nonmedical sources; men were much more likely than women to obtain prescription psychotropics from illegal and nonmedical sources. (13 references)

14. **Milman, Doris H. Multiple drug usage by children.** *New York State Journal of Medicine,* 72(22):2793-2796, November 15, 1972.

Previous experience with children indicated that they confined their drug use largely to glue and other inhalants; however, the author has recently come into contact with several children (under 12 years of age) who can be characterized as users of strong and sophisticated multiple drugs. Case reports of two 10-year-old Puerto Rican girls who misused a variety of substances (including alcohol, glue, cannabis, hallucinogens, and possibly, heroin) are presented in detail. Both were initiated into drug usage by somewhat older peers. Group pressure, often including inducements to try any substance available, was viewed as fundamental to the establishment of the multiple drug-using pattern in these children. In several instances, for example, these children were presented with unknown drugs, which they took simply because of their belief that the substances would make them "feel good." (10 references)

15. **Milman, Doris H., and Anker, Jeffrey L. Patterns of drug usage among university students. Multiple drug usage.** In: Keup, W., ed. *Drug Abuse. Current Concepts and Research.* Springfield, Ill.: Charles C Thomas, 1972. pp. 190-201.

A 220-item questionnaire, designed to gather information on drug-using patterns, was distributed to students at two university centers, two agricultural and technical colleges, six liberal arts colleges and three medical schools of a large eastern state university system. The questionnaire was administered to randomly selected morning classes, with approximately 600 students being surveyed at each school. By this means a response rate very close to 100 percent was obtained from the total of 6,110 students who took part in the study. The lifetime use (past and present use) of individual drugs in order of decreasing frequency was: alcohol, 98 percent; marihuana, 27 percent; hashish, 18 percent; amphetamines, 10 percent; opium, 6 percent; barbiturates, 4 percent; LSD, 4 percent; glue, 1 percent; cocaine, 1 percent; and heroin, less than 1 percent. The use of cannabis and amphetamines was more extensive among graduate students, while undergraduates were more likely to use opium, glue, cocaine, and heroin. The wider range of drugs used by the undergraduates suggests that these students are more experimental and less discriminating. Two-thirds of all students who admitted to the use of drugs employed three or more drugs in a multiple-use pattern. Heavy use of alcohol was found to highly correlate with multiple-drug use. (9 references)

16. **Prendergast, Thomas J.; Preble, Merle R.; and Tennant, Forest S. Drug use and its relation to alcohol and cigarette consumption in the military community of West Germany (drugs, alcohol, cigarettes in a military setting).** *International Journal of the Addictions,* 8(5):741-754, 1973.

An epidemiological study of the prevalence of smoking, drinking, drunkenness, and drug usage based on the analysis of a questionnaire survey administered to 557 American High School students and 1,219 military personnel during 1970 indicated that disorders of habit as manifested by cigarette smoking, excessive alcohol consumption, or drug abuse are interrelated. These data are interpreted as consistent with the hypothesis that some individuals respond to stress through drug-taking, with resultant consequences for health. Drug use is thus seen as a relatively new manifestation of established coping mechanisms (experimentations, habits, intoxications). Smoking and drunkenness were found to be highly associated with drug usage, especially the usage of more than one type of substance. Of the military drug users, 78 percent had first used drugs before coming to Germany, and 65 percent had used drugs before entering military service. In contrast, fewer than 40 percent of the high school drug users interviewed had used drugs before coming to West Germany. (20 references)

17. **Schut, Jacob; Naglin, Barbara A.; File, Karen; and Wohlmuth, T. A new pattern of drug addiction.** *Annals of Internal Medicine,* 78(5):814-815, May 1973.

A comparison of admissions over a 4-year period in a large outpatient methadone maintenance facility showed some startling patterns regarding initial drug use and drug-taking behavior. First, there has been a

strong shift away from the use of cannabis as the first drug. Secondly, a significant majority of patients began using their first narcotic before their 21st birthday. Thirdly, more than three-fourths of patients admitted using drugs other than heroin in the 2-month period before starting treatment, a complete reversal of a trend documented in 1969. The rather large incidence of multiple drug misuse indicate a need to evaluate both current theories regarding the process of drug use and measures aimed at prevention. Addicts no longer seem to pass through the progression from soft drugs to narcotics. Rather, they become addicted while adolescents to the first drug tried, and their dependencies expand to other substances. (Author abstract modified)

MANAGEMENT OF POLYDRUG USE

18. **Berle, Beatrice Bishop; Ganem, Meyer; and Lowinson, Joyce. Detoxification of multiple-drug abusers with sodium amytal.** *New York State Journal of Medicine*, 72(24):2971-2973, December 15, 1972.

Ninety-six heroin addicts with mixed addictions who were admitted to a methadone maintenance program or were already established on a blocking methadone dose were detoxified with a regimen of sodium amytal. The drugs from which the patients were detoxified were glutethimide (24 patients), barbiturates (32 patients), ethchlorvynol (2 patients), and alcohol (15 patients). Twenty-five patients were detoxified from two drugs combined, including alcohol and barbiturates, barbiturates and glutethimide, and amphetamines, barbiturates, and glutethimide. Detoxification took place over a 7-day period, with the dose of sodium amytal gradually being reduced from 250 mg. to 50 mg. before total withdrawal. Of the 96 patients, 92 were detoxified without incident, and four had convulsions on the seventh day. Three of the patients who had convulsions had a history of epileptic seizures controlled by diphenylhydantoin, and one had no history of epilepsy or previous seizures. Fifty-two of the original 96 patients were still enrolled in the program 4 to 13 months after their last admission to the ward; 44 had been discharged from the program or were lost to followup. The authors conclude that a 7-day schedule of decreasing doses of sodium amytal provides a safe and comfortable detoxification from a variety of drugs, singly or in combination, and does not interfere with either building up or maintaining a patient on methadone. The results beyond immediate detoxification, the authors warn, were disappointing, however. Multiple drug using patients seemed to present greater psychiatric problems and were more difficult to treat than typical methadone maintenance patients. (4 references)

19. **Gay, George R. Acute treatment of heroin addiction with special reference to mixed addictions.** *Journal of Psychedelic Drugs*, 4(2):113-117, Winter 1971.

Guidelines for the management of acute intoxication from heroin and/or several other depressant substances are presented. Because multiple drug abuse (especially involving sedatives) may mask pinpoint pupils, practitioners are advised not to expend time checking for this sign of heroin intoxication. The author enjoins the therapist to expect multiple drug abuse as the cause of respiratory depression because only the true opiate-using novice will be in danger of respiratory depression and death from the poor grade of heroin available on the streets of most major cities. Treatment involves the rapid establishment of an airway, quick assessment of the cardiovascular system, the administration of a narcotic antagonist, and constant monitoring of vital signs. This last measure is especially relevant when the overdose may have resulted (in whole or in part) from methadone for the patient may lapse back into a coma and die of respiratory depression as the relatively short-acting narcotic antagonist wears off. (11 references)

20. **Gay, George R. Acute treatment of heroin addiction with special reference to mixed addictions: I. Acute treatment.** In: Einstein, S., and DeAngelis, G.G., eds. *The Non-Medical Use of Drugs: Contemporary Clinical Issues.* Farmingdale, N.Y.: Baywood Publishing Co., 1972. pp. 1-8.

Recent developments in the Haight-Ashbury district of San Francisco have pointed toward marked increases in multiple-drug using patterns. This overall trend poses some serious problems for drug treatment personnel, especially those involved in the manage-

ment of short-term overdose states. In this light, the author outlines a treatment regimen for intoxication states due to combinations of sedative-hynotics, alcohol, tranquilizers, and narcotic drugs. Originally developed at the Haight-Ashbury Free Medical Clinic, this regimen involves the establishment of an airway, mouth-to-mouth respiration, careful assessment of cardiovascular responses, and the administration of narcotic antagonists. In severe cases of narcotics and other drug overdoses, especially if long neglected, the patient's cardiovascular system may be so depressed that pulmonary edema may develop. Intubation or tracheostomy, plus continuous positive pressure respiration, may then be lifesaving. If reason exists to suspect very recent overdose of respiratory depressant drugs, the practitioner may consider giving doxapram hydrochloride (Dopram) intravenously. The administration of this nonspecific respiratory stimulant is contraindicated, however, if the case is not one of very recent overdose.

21. **Liebson, Ira, and Bigelow, G. A behavioural-pharmacological treatment of dually addicted patients.** *Behaviour Research and Therapy,* 10(4):403-405, November 1972.

Methadone maintenance therapy is often complicated by the presence of alcoholism in certain treatment populations. Methadone is often successful with patients who are dependent only upon narcotics because it produces a long-acting blockade against narcotic hunger and because it shares many of the primary reinforcing properties of the other opiates. The importance of methadone's reinforcing action can be readily seen when it is compared with narcotic antagonists; these drugs also produce a pharmacological blockade against the effects of further narcotic administration, but they do nothing to allay narcotic hunger. The level of treatment success with narcotic antagonists, therefore, is very disappointing when compared with that of methadone. Taking advantage of methadone's primary reinforcing property, the authors suggest a treatment regimen combining disulfiram with methadone for multiple drug abuse of the narcotic-alcohol type. This treatment regimen allows access to daily doses of methadone contingent upon the patient's willingness to take disulfiram. A case history is presented of a 36-year-old man with an 18-year history of severe alcohol abuse and a 12-year history of narcotic addiction who was admitted to a hospital ward because of a severe alcohol withdrawal syndrome. Upon discharge, he was offered the opportunity to participate in methadone maintenance therapy only if he drank a well-mixed suspension of disulfiram under the daily direct observation of a clinic nurse. After three years of treatment, this patient continued to attend the clinic daily, worked steadily, and improved in a number of other respects. (17 references)

22. **McKenna, Gerald J.; Fisch, Alan; Levine, Matthew E.; Patch, Vernon D.; and Raynes, Anthony E. Problems of mixed addictions on a detoxification unit.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment. 1973 Proceedings.* New York: NAPAN, 1973. pp. 990-994.

During the latter half of 1972, the authors noted increasing numbers of patients with mixed addictions presenting themselves for treatment at the Boston City Hospital Drug Detoxification Unit. A preponderance of the mixed addiction cases occurred among white male addicts, and the authors point to the widespread knowledge and acceptance of sedative-hypnotic agents and tranquilizers among whites as a contributing factor. Where the presenting case is one of mixed narcotic-barbiturate dependence, the authors utilize the phenobarbital substitution and detoxification technique originally developed by David E. Smith and Donald Wesson at the Haight-Ashbury Free Medical Clinic in San Francisco. Where the mixed addiction involves a minor tranquilizer or a nonbarbiturate sedative hypnotic, the agent itself is employed in the detoxification process. Detoxification is undertaken simultaneously for all the drugs upon which the patient is dependent. In general, all polydrug abusers are detoxified within 3 weeks of starting treatment. The treatment results from the Boston Hospital unit indicate that multiple drug abusers are more difficult to manage than are patients dependent solely upon opiates. Of the patients treated (N = 441), 52 percent of the opiate addicts have been successfully detoxified, compared to only 36 percent of those with mixed addictions. Individuals detoxifying simultaneously from barbiturates and heroin were particularly hard to manage; they displayed a high incidence of aggressive and assaultive behaviors and were much more likely to take drugs surreptitiously. (5 references)

23. **Wesson, Donald R. Acute treatment of heroin addiction with special reference to mixed**

addictions: Part II: Withdrawal. In: Einstein, S., and DeAngelis, G.G., eds. *The Non-Medical Use of Drugs:* Contemporary Clinical Issues. Farmingdale, N.Y.: Behavioral Publishing Co., 1972. pp. 9-16.

The author distinguishes two major classes of withdrawal syndromes: (1) the narcotic withdrawal syndrome, produced by heroin, morphine, meperidine, and methadone; and (2) the depressant withdrawal syndrome, produced by barbiturates, meprobamate and a variety of tranquilizers, sedative-hypnotics, and alcohol. Abrupt, "cold turkey" withdrawal from heroin, because of the relatively low potencies of the drug available on the street, rarely is life-threatening, but similar cessation of sedative-hypnotic use may be very dangerous. Heroin users knowingly use barbiturates, alcohol, or other sedative-hypnotics to supplement narcotic administration or to self-medicate for heroin withdrawal symptoms. It is not unlikely, therefore, for many heroin addicts entering detoxification programs to be additionally dependent on these other drugs. Since the withdrawal symptoms from heroin and barbiturate-type drugs are similar, the clinical picture is difficult to assess if both drugs are withdrawn at the same time. Accordingly, the author advises that patients be withdrawn from both classes of drugs sequentially rather than simultaneously. One such detoxification method, developed at the Haight-Ashbury Free Medical Clinic, involves maintaining the patient on a blockading dose of methadone while barbiturate detoxification is accomplished with decreasing doses of phenobarbital. Upon completion of the barbiturate withdrawal, the patient is then put on a regimen of decreasing doses of methadone to effect narcotic withdrawal. (4 references)

24. Wesson, Donald R.; Gay, George R.; and Smith, David E. Treatment techniques for narcotic withdrawal with special reference to mixed narcotic-sedative addictions. *Journal of Psychedelic Drugs,* 4(2):118-122, Winter 1971.

The withdrawal syndrome from heroin and other narcotics differs significantly from that produced by sedative-hypnotics and alcohol. Frequently, individuals will abuse both types of substances and present a clinical picture which may be confusing. Because of the poor quality of heroin available to most street users, detoxification is relatively uncomplicated and may be accomplished with either decreasing doses of methadone or nonnarcotic medications used to alleviate particular withdrawal symptoms. Unlike withdrawal from narcotics, depressant withdrawal in its extreme form consists of convulsions, delirium, and hyperpyrexia, and can be life-threatening. Because of the serious complications of depressant withdrawal, inpatient hospitalization should be used whenever possible during the withdrawal phase of this treatment. The authors recommend phenobarbital substitution in most cases of detoxification from short-acting barbiturates. Although heroin addicts usually have a distinct preference for heroin and view the barbiturate addict with contempt, many of them supplement their narcotics intake with various sedative-hypnotics and alcohol. The authors advocate sequential detoxification in most cases of mixed addiction to heroin and barbiturate-type drugs. (14 references)

ALCOHOL AND POLYDRUG USE

25. Devenyi, Paul, and Wilson, Mary. Barbiturate abuse and addiction and their relationship to alcohol and alcoholism. *Canadian Medical Association Journal,* 104:215-218, February 6, 1971.

The medical profession has become increasingly aware that alcoholics do not always confine themselves to the abuse of a single substance. Among the various drugs that alcoholics may combine with alchol, the barbiturates are, according to the authors, the most common. Alcoholics are generally quick to recognize that the intoxicating effects of barbiturates are in many ways similar and interchangeable with those of alcohol; furthermore, barbiturates greatly boost the subjective effects of alcohol when the two substances are taken in combination. The synergism between alcohol and the barbiturates poses a significant danger of death from overdose when the confusion caused by either substance leads to increased self administration of the other. In addition, the liver damage which often accompanies long-term abuse of alcohol may impair an individual's ability to metabolize short-acting barbiturates,

resulting in barbiturate toxicity with relatively small doses. The authors caution their colleagues against prescribing barbiturates and sedative-hypnotics to patients with a history of alcohol abuse. (42 references)

26. Finkle, Bryan S.; Biasotti, Alfred A.; and Bradford, Lowell W. The occurrence of some drugs and toxic agents encountered in drinking driver investigations. *Journal of Forensic Science,* 13(2):236-245, April 1968.

Of 3,409 cases of drinking driver arrests, 705 or 21 percent indicated some kind of concurrent drug use upon routine questioning of the driver by the arresting officer. These 705 individuals mentioned 107 different specific drugs which were taken in combination with alcohol prior to arrest. The multiple abuse of alcohol and other substances was categorized by the authors into some 20 different groups, including: tranquilizers (used by 132 drinking drivers), analgesics and antipyretics (used by 107), stimulants (used by 63), hormones and steroids (used by 51), sedatives and hypnotics (used by 51), anti-infective agents (used by 42), vitamins and minerals (used by 38), antidiabetic agents (used by 37), antihistamines (used by 35), anticoagulants (used by 26), narcotics (used by 26), anticholinergic agents (used by 15), diuretics (used by 15), antiasthmatics (used by 10), antiarthritics (used by 9), antispasmodics (used by 9), antacids (used by 7), laxatives (used by 3), and cocaine (used by 2). In many cases, individuals who had taken tranquilizers, sedative-hypnotics, and narcotics displayed slurred speech and staggering despite the fact that their alcohol consumption was well below that necessary to produce a 0.15 blood level (used by many States as a legal confirmation of drunkenness). The authors conclude that multiple drug misuse involving alcohol poses a significant threat to highway safety. (2 references)

27. Freed, Earl X. Drug abuse by alcoholics: A review. *International Journal of the Addictions,* 8(3):451-473, 1973.

The literature on conjoint alcohol and drug abuse is reviewed with particular reference to drug abuse by alcoholics. There are numerous hypothesized psychodynamic similarities as well as differences between alcoholism and drug dependence, as well as equivocal evidence for the notion of specific versus generalized addiction. Despite methodological barriers, there is a need for hard data. A review of relevant studies reveals that about 20 percent of addicted individuals use both alcohol and some other addicting drug to excess. There are some hints that conjoint use of both substances is more prevalent among younger than older people, that the tempo of research in this area is increasing and that possibly animal models can contribute to the understanding of addictions. (151 references; author abstract)

28. Mozdzierz, Gerald J.; Macchitelli, Frank J.; and Lottman, Thomas J. Personality correlates of coffee consumption in an alcoholic population. *Psychological Reports,* 32(2):550, April 1973.

The authors identify alcoholics as oral dependent individuals who rely heavily upon the use of alcohol to deal with stress. In the absence of alcohol, such as the situation in an inpatient treatment program, coffee drinking became a substitute oral gratifier and, as such, was viewed as a unique identifier and index of the patient's distress. Coffee consumption among alcoholics was found to correlate significantly with two MMPI scales in a group of 45 male veterans participating in a 6-week inpatient alcoholism treatment program. Further studies with Guilford-Zimmerman subscales disclosed that the high coffee consuming alcoholic tends to be conventional, submissive, moralistic, critical and demanding, whereas the low coffee drinking alcoholic appears to be rebellious, unreliable, socially bold, and unloyal. (4 references)

29. Wechsler, Henry, and Thum, Denise. Teen-age drinking, drug use, and social correlates. *Quarterly Journal of Studies on Alcohol,* 34(4):1220-1227, December 1973.

Anonymous questionnaires, designed to elicit information on the extent and nature of alcohol and drug-use patterns, were distributed to junior and senior high school students in two eastern Massachusetts communities. The samples were obtained by selecting a random sample of classes held during the hour scheduled for questionnaire administration. In both communities, senior high school students were about twice as likely as the younger students to report relatively heavy alcohol use. Compared to students who had used beer or wine only and to those who had used distilled spirits but had not been drunk,

the distilled spirits users who had been drunk reported much more frequent use of beer or wine. These heavy users were also more likely to display a multiple drug-using pattern in which alcohol was employed concurrently with various illicit and psychoactive drugs. The most common drugs used by the heavy alcohol abusers, in order of preference, were: cannabis, amphetamines, barbiturates, cough syrup, glue, heroin, and LSD. Multiple drug users were considerably more likely to have been involved in delinquent activities than abstainers and light drinkers. The authors conclude that teenagers who drink fairly heavily tend to be alienated from their parents and from traditional values and standards of behavior, and to identify more closely with the youth culture, than do teenagers who drink moderately or not at all. (7 references)

CANNABIS AND POLYDRUG USE

30. Cohen, Herman. Multiple drug use considered in the light of the stepping-stone hypothesis. *International Journal of the Addictions,* 7(1):27-55, 1972.

Data on drug-using careers were collected by questionnaire in three large Dutch cities and 17 smaller towns. In addition, 150 intensive interviews were conducted for the purposes of taking case histories of multiple drug users. No attempt was made to draw upon a representative sample, and only 64 percent of the drug users approached for the study agreed to supply information on their drug-using behaviors. The drugs most commonly used by the respondents included: LSD (24 percent), opium (20 percent), amphetamines (42 percent), cannabis (92 percent), and alcohol (61 percent). Over 75 percent of the respondents who began using an illicit drug expanded their drug-taking patterns to encompass other substances within a relatively short period of time. The most popular first drug was cannabis; 68 percent of the respondents started their illicit drug using career with this substance. Only 24.5 percent of the cannabis users restricted their drug use to cannabis; 26 percent used one other drug in addition to cannabis, 35 percent used two additional drugs, and 14 percent employed three additional substances. The most common pattern of multiple drug abuse involved two or more of the following substances: cannabis, opium, LSD, and amphetamines. The author traces the popularity of these particular drugs to market conditions of price, availability, and demand. Multiple drug use by cannabis devotees is hypothesized to correlate well with the degree of an individual's involvement with a well-defined youth subculture. (21 references)

31. Dearden, Marlin. Does marijuana lead to other drugs? *School Management,* 16(7):31, July 1972.

The controversy over cannabis and whether its use leads to involvement with other more dangerous substances is explored. Frequently, those who argue for maintenance of the presently existing laws prohibiting the use of cannabis, cite the often quoted statistic that 75 to 80 percent of the known heroin addicts began their involvement with illicit drug use with cannabis. Those who argue for the legalization of cannabis cite the lack of evidence of a definitively causative relationship between the use of soft and hard drugs. Although the author concedes that cannabis use may not necessarily lead to involvement with heroin, her review of a recent study of student drug-using patterns discloses that cannabis use is often associated with the use of a number of other substances. Of the 473 students surveyed in four Connecticut high schools, 40 percent admitted to the use of cannabis. Among the cannabis users, two out of every three acknowledged the use of at least one other illicit substance. In addition, moderate and heavy cannabis users were found to be more likely to engage in patterns of multiple drug use than were light or nonusers of the drug. In another student survey, conducted in New Jersey, the same patterns emerged. Among 1,044 current cannabis users, 85 percent reported using hashish, 34 percent used LSD, 13 percent employed amphetamines, and 11 percent had experimented with heroin.

32. Fisher, Gary, and Brickman, Harry R. Multiple drug use of marihuana users. *Diseases of the Nervous System,* 34(1):40-43, January 1973.

Social network and random sampling techniques were used to assemble two groups of adults from southern California voter registration lists: (1) a group of 573

subjects who had never used cannabis; and (2) 530 individuals who admitted using the drug at least once. The cannabis users were further subdivided into the following categories: (1) trial users (N = 47); (2) past users (N = 79); (3) occasional users (N = 147); (4) regular users (N = 200); and (5) heavy, or daily users (N = 57). Respondents from both the major groups were surveyed to determine their nonmedical use of six additional classes of drugs: alcoholic beverages, stimulants, psychedelics, tranquilizers, barbiturates, and hard narcotics. The belief that cannabis users indulge less in alcohol than nonusers was not supported by the authors' findings. While most subjects (70 to 80 percent) reported mild use of alcohol, there was a tendency for current cannabis users to report more of a regular involvement with wine and hard liquor. As cannabis use increases, concomitant increases were also seen for stimulant use; the regular and daily users of cannabis reported the highest degree of involvement with illicit stimulants. Similarly, cannabis use was also shown to correlate well with an increasing trend to use psychedelic drugs. No association was found, however, between increasing use of cannabis and the use of tranquilizers. Heavy use of cannabis, in addition, was associated with greater levels of experimentation with barbiturates and some hard narcotics. In general, the daily cannabis user was more frequently associated with multiple use patterns of all nonprescription drugs; however, the regular use of illicit drugs by the cannabis user is infrequent and only one out of 530 cannabis users was a regular user of narcotics. (5 references)

33. **Goldstein, Joel W., and Gleason, Terry C. "Significance of increasing student marijuana use for intended use of other drugs."** Report 73-2, Department of Psychology, Carnegie-Mellon University, Pittsburgh, Pa., 1973. 11 pp. (Mimeo.)

A longitudinal study of student drug use among members of the class of 1972 at Carnegie-Mellon University is reported. The class of 1972 went from having 18 percent of its members with any marihuana experience during their first days on campus to 63 percent in the weeks just prior to graduation, an increase of 286 percent over the four academic years. Despite the fact that cannabis usage increased so markedly, the students' interest in other illicit drugs (hallucinogens, amphetamines, barbiturates, etc.) was found to decline over the 4-year period. The authors conclude that increasing use of cannabis is not necessarily productive of enhanced desires to experiment with less common substances. (1 reference)

34. **Goode, Erich. Multiple drug use among marijuana smokers.** *Social Problems,* 17(1):48-64, Summer 1969.

During the spring and summer of 1967 the author interviewed about 200 cannabis users (a sample of opportunity) in an attempt to explore their multiple drug-using patterns. Among the 204 individuals who agreed to participate in the study, 68 percent admitted to the use of at least one other drug than cannabis. The median number of drugs taken by the subjects, in addition to cannabis, was almost exactly two and the mean was 3.4. In spite of the commonly stated belief that cannabis use will lead to the use of, and eventual addiction to, heroin, only 13 percent of the sample had used the drug at least once. Among this small number of individuals who had tried heroin (N = 27), extremely limited use was more common than repeated usage. Over half of the heroin users took the drug fewer than 12 times, and of these, 11 tried it three or fewer times. Only 2.5 percent of the total sample of cannabis users claimed to be dependent upon heroin. In contrast to the narcotics, almost half (49 percent) of the respondents acknowledged the use of LSD; however, 25 percent of the LSD takers had used the drug only once and only 7 percent had taken it more than 25 times. A similar sized proportion of the sample (43 percent) admitted to the use of amphetamines on at least one occasion. Heavy use of cannabis was seen as an important indicator that the individual may engage in intense and extensive social interaction with other cannabis users; this subcultural involvement, in addition, increases the likelihood of taking other drugs approved by the subculture. (27 references)

35. **Grupp, Stanley E. Multiple drug use in a sample of experienced marijuana smokers.** *International Journal of the Addictions,* 7(3):481-491, 1972.

A selected nonrandom sample of experienced cannabis users was interviewed in an attempt to characterize their multiple-drug using patterns. An effort was made to obtain a spread of cannabis smokers from various social strata and the final sample represented the following groups: blacks,

whites, college students, prison inmates, ghetto residents, males, and females. All subjects were extensively involved with cannabis; many used the drug several times per week. Seventy-three (81 percent) of the 90 subjects had some experience with at least one illicit drug other than cannabis. Barbiturates were mentioned by 45 persons and amphetamines were mentioned by 40 persons. In addition, 36 respondents indicated use of a variety of miscellaneous drugs (such as cough syrup, opium, tranquilizers, etc.). Cannabis users who also employed heroin or other hard narcotics were not included in this study. The mean number of other drugs used by these experienced cannabis smokers was 3.1, a figure which the author regards as conservative because of possible recall error. Of the three major groups studied, college students were the most extensive multiple drug users, reporting the use of an average of 3.4 drugs other than cannabis; prison inmates reported an average of 2.7 other drugs, while ghetto blacks reported an average of only 1.4 other drugs. Of the total of 90 cannabis users interviewed, some 44 percent reported an intensive involvement (heavy use pattern) with at least one other drug. Of these 40 subjects with extensive experience with a noncannabis illicit drug, 7 had used hallucinogens, 9 had used amphetamines, 17 had used barbiturates, and 7 had experience with miscellaneous substances. (3 references)

36. **Joyce, C.R.B. From soft to hard drugs. Progression, regression or digression?** In: Keup, W., ed. Drug Abuse. *Current Concepts and Research.* Springfield, Ill.: Charles C. Thomas, 1972. pp. 243-250.

Most studies on the progression of individuals through various drug using patterns suffer from a lack of longitudinal perspective. Retrospective investigations may be able to establish that drug-using patterns are nonrandom, but they are inherently unable to generate data which can either support, or not support, a causative link between the use of one drug and another. The author speculates, however, that there are psychological reasons why people who have experimented with one drug (such as cannabis) will want to experiment with another. This psychological predisposition is tempered by the availability of the drugs in question (such as LSD and narcotics), access to information on the effects of various substances, and social control check points (such as parents and the school). In general, those who have used at least one illicit drug are more likely to use another. Multiple drug use is most common among those who have employed some of the more dangerous substances (such as heroin or LSD) and least common among those who have used relatively innocuous drugs (such as aspirin or a prescription minor tranquilizer). (11 references)

37. **McGlothlin, William; Jamison, Kay; and Rosenblatt, Steven. Marijuana and the use of other drugs.** *Nature,* 228(5277):1227-1229, December 19, 1970.

An unexplored aspect of the interaction between the use of cannabis and other drugs is the effect of suppressing the cannabis market. A shortage of cannabis was reported in the United States during 1968 and 1969 after increased efforts were made to step up surveillance along the Mexican border. Some of the rumored effects of the shortages were higher prices, the sale of poor grade cannabis grown in the United States, and an increase in the use of other drugs as substitutes for cannabis. In October 1969, during Operation Intercept, the authors surveyed 478 students at a university in Los Angeles and 116 patients from the Los Angeles Free Clinic in an effort to delineate the interaction between cannabis and other drug use. The use of other drugs (including tobacco, alcohol, sedatives, stimulants, hallucinogens, and narcotics) was found to be strongly correlated with the frequency of cannabis use in the student group, and to a lesser extent in the sample of patients. Of those who had used cannabis ten or more times, 44 percent of the students and 51 percent of the patients reported that their frequency of cannabis use was below normal at some time between May and October of 1969, as a consequence of the unavailability of the drug. Of those reporting a shortage of cannabis, 76 percent of the students and 84 percent of the patients admitted that they increased their consumption of one or more other drugs (including alcohol) because of the unavailability of cannabis. The most common substitute drugs in order of preference were: alcohol, sedatives, stimulants, LSD, other strong hallucinogens, and opiates or cocaine. (6 references)

38. **Milman, Doris H. The role of marihuana in patterns of drug abuse by adolescents.** *Journal of Pediatrics,* 74(2):283-290, February 1969.

Eleven patients, ten adolescent and one young adult of the middle and upper classes, were studied with

respect to patterns of drug use and clinical effects. Ten were chronic users of cannabis, one a one-time user. Multiple drug use was the rule for all but the one-time user. Cannabis was used by all and was most frequently the first drug employed. LSD was the second most frequently used drug, followed by amphetamines. The seven who were studied psychiatrically prior to drug use were all diagnosed as having personality disorders. Following drug use, all 11 were diagnosed as having acute or chronic schizophrenia. Three patients required repeated hospitalization. Chronic social disability, including failure to complete school, delinquency, and participation in a drug subculture, ensued in all of those (10 of 11) who continued to use drugs. (18 references; author abstract modified)

39. Tec, Nechama. A clarification of the relationship between alcohol and marihuana. *British Journal of Addiction*, 68(3):191-195, October 1973.

In general, studies based on diverse samples, and from a variety of geographic backgrounds, indicate that most cannabis smokers also drink alcohol. This association, however, is not reciprocal; while most cannabis users also drink alcohol, only a minority of alcohol drinkers have any direct experience with cannabis. In order to clarify the relationship between the use of these two drugs, the author administered a questionnaire to over 1,700 high school students in a New York City suburb. A total sampling technique was employed and a response rate of 94 percent (N = 1,704) was achieved. The degree of involvement with cannabis among these students was as follows: 12 percent were regular users, 12 percent were occasional users, 8 percent had tried the drug once, 8 percent had never used the drug, but expressed a desire to try it at some future time, and 60 percent had never tried, and never wanted to try, cannabis. In contrast, 7 percent used alcohol frequently, 41 percent drank occasionally, 12 percent drank infrequently, and 40 percent abstained. Heavy marihuana use was found to be significantly associated with heavy alcohol use, however, regular cannabis use was not found to be linked to regular or heavy use of alcohol. The authors conclude that legalization of cannabis would have little, if any, impact on consumption patterns of alcohol. (10 references)

40. Whitehead, Paul C.; Smart, Reginald G.; and Laforest, Lucien. Multiple drug use among marijuana smokers in Eastern Canada. *International Journal of the Addictions*, 7(1):179-190, 1972.

This study examines the patterns of multiple drug use among students drawn from surveys of over 12,500 adolescents in Halifax, Montreal, and Toronto. Smokers of cannabis are found to have much higher rates of use of other drugs than those students who have not used cannabis. These findings are discussed in terms of the social and legal implications of illicit drug use that can be seen as resulting in a considerable number of drug centered associations and activities. When this perspective is taken, multiple drug use appears to be a form of social behavior rather than a by-product of immutable psychopharmacological laws. (23 references; author abstract modified)

41. Wilson, C.W.M. Drug dependence of the cannabis type. Marijuana-heroin interdependence. In: Wilson, C.W.M., ed. *The Pharmacological and Epidemiological Aspects of Adolescent Drug Dependence*. Oxford: Pergamon Press, 1968. pp. 249-254.

Reliable statistics concerning the interaction of cannabis use with the use of heroin and other dangerous drugs are sorely lacking. The author's personal experience with youthful drug abusers who present themselves for treatment indicates that most have used cannabis, about one-third have used barbiturates to excess, and 20 percent admit to the heavy use of amphetamines. In general, the author asserts that a young person who is heavily involved in the use of one illicit drug will be more likely to employ others, especially when the drug of choice is not readily available.

HALLUCINOGENS AND POLYDRUG USE

42. Singh, Ram N., and Haddy, Loretta E. Alcohol consumption and the students' use of hallucinogenic drugs. *West Virginia Medical Journal*, 69(4):88-90, April 1973.

Students attending several high schools in Charleston, West Virginia were surveyed by questionnaire to determine the relationship between the use of alcohol and hallucinogenic drugs. A total sample of 2,900 students was employed, but only 1,995 returned usable questionnaires. Of those responding, 245 admitted to the use of cannabis or LSD, while 1,750 denied involvement with these substances. A statistically significant association (p less than .01) was found between hallucinogenic drug use and consumption of alcoholic beverages. The majority of drug users (63.3 percent) classified themselves as moderate or heavy drinkers, while a minority (21.7 percent) of the nondrug users acknowledged moderate to heavy alcohol consumption. Another significant association was found between parental drinking patterns (especially on the part of the father) and the use of hallucinogens and cannabis by these high school students. In addition, students were more likely to employ cannabis and hallucinogens if they associated with peers who used these substances.

43. **Smart, Reginald G., and Fejer, Dianne. Illicit LSD users: Their social backgrounds, drug use and psychopathology.** *Journal of Health and Social Behavior,* 10(4):297-308, December 1969.

A nonrandom sample of 100 LSD users and a group of 46 matched nonuser controls were given a structured interview to elicit various demographic characteristics and drug-using patterns. In addition, the subjects were administered a battery of psychological tests (Otis Quick-Scoring Mental Ability Test, Thematic Apperception Test, MMPI). In contrast to most other studies, the LSD-using group had fewer students and more members of various occupations than the control group. The majority of LSD users and nonusers drank alcoholic beverages; however, almost twice as many non users as users drank as frequently as three times a week. About 85 percent of the LSD users, but only 39 percent of the nonusers, used psychoactive drugs (tranquilizers, barbiturates, antidepressants, and stimulants) frequently. Some 60 percent of the psychoactive drugs taken by non-LSD users were obtained through medical channels, compared to only 25.4 percent of the substances taken by the LSD users. Friends were the most common source of other drugs for LSD users, but few non-LSD users obtained drugs in this manner. All of the LSD users had also used cannabis, compared to only 28.26 percent of the non-LSD users. No significant differences emerged between the LSD user group and the nonuser group on the intelligence tests. On the MMPI, the LSD users had higher scores than the nonusers on the following scales: schizophrenia, hypomania, psychopathic deviate, and hypochondriasis. Ninety-six percent of the LSD users' MMPI profiles were judged to be abnormal, compared to only 46 percent of the nonusers' profiles. (19 references)

METHADONE AND POLYDRUG USE

44. **Berger, Herbert, and Schweigler, Michael. Smoking characteristics of methadone patients.** *Journal of the American Medical Association,* 222(6):705, November 6, 1972.

Patients in the methadone maintenance program at the Richmond Memorial Hospital have, according to the authors, exhibited multiple drug misuse. They have intermittently used alcohol, methadone, heroin, other opiates, tranquilizers, antidepressants, stimulants, and hallucinogens. The authors assert that their choice of drugs is governed not by design, but by availability. To substantiate this observation that methadone patients have a tendency to overutilize any available habit-forming substance, a survey was made of the smoking habits of 181 patients under treatment. Of the 181 patients in the program, 177 smoked from one to three packs of cigarettes a day. Statistics from the Department of Health, Education, and Welfare disclosed that, in contrast, only 36.7 percent of males in the general population (of the same age group) smoke to such a degree. The authors assert that this observation tends to support the premise that there are only addictive personalities, not addictive drugs. (2 references)

45. **Chambers, Carl D., and Taylor, W.J. Russell. "The incidence and patterns of drug abuse among long-term methadone maintenance patients."** *Presented at the Thirty-Third Annual Meeting of the National Research Council,*

Committee on the Problems of Drug Dependence, Toronto, Ontario. February 16-17, 1971. 17 pp. (Mimeo.)

The drug using behavior of 119 stabilized methadone maintenance patients enrolled at the Philadelphia General Hospital treatment program was studied using urinalysis surveillance over a 9-month period. In general, the extent of drug abuse among these 119 patients was greater than anticipated. Heroin was being abused by 35.3 percent of the patients, other narcotics were being abused 9.5 percent of the time, barbiturates were being abused 11.5 percent of the time, and amphetamines were being abused 14.4 percent of the time. Low-dose methadone patients (60-110 mg.) were found to be more likely to abuse other drugs (especially heroin) than were high-dose (110-220 mg.) patients. Black patients were found to abuse heroin more often than whites and white patients more frequently showed "clean urines." Those who had been in treatment for more than 18 months were less likely to abuse heroin and other drugs. Cocaine use was detected among 31.9 percent of the 119 methadone maintenance patients and was found to be more prevalent among high-dose (110-220 mg.) patients. The authors conclude that while methadone effectively eliminates the patient's fears of the abstinence syndrome, it does not, however, eliminate the desire for and pursuit of pleasurable drug effects.

46. **Chambers, Carl D., and Taylor, W.J. Russell. The incidence and patterns of drug abuse during maintenance therapy.** In: Chambers, C.D., and Brill, L., eds. *Methadone: Experiences and Issues.* New York: Behavioral Publications, 1973. pp. 121-129.

Urine specimens were collected from a group of 119 stabilized methadone patients over a 9-month period in order to determine their degree of involvement with illicit drugs. In general, patients on a high-dose (110-220 mg./day) regimen of methadone were more likely not to abuse heroin or other illicit drugs. However, the extent of cocaine abuse was found to be higher among the high-dose patients. In spite of the high degree of multiple drug abuse among all methadone patients in this study, 52.9 percent were maintaining intact marriages, 44.5 percent were gainfully employed, and only 1.7 percent had been arrested after enrollment in the treatment program.

47. **Chambers, Carl D.; Taylor, W.J. Russell; and Moffett, Arthur D. The incidence of cocaine abuse among methadone maintenance patients.** *International Journal of the Addictions,* 7(3):427-441, 1972.

A wide range of epidemiological investigations have disclosed that most narcotic addicts, and, therefore, most candidates for methadone maintenance, are polydrug abusers. While urine screening methods to detect the presence of amphetamines and sedative-hypnotics have been incorporated into most methadone programs, techniques for the identification of cocaine use have been generally lacking. Accordingly, the authors report the development of a simple and reliable urine screening method to detect the presence of cocaine and the results of the surveillance made possible with the procedure. The urine screening method involves the separation of cocaine from methadone during thin-layer chromatographic processes using cation exchange paper. Using the detection procedure, the authors studied multiple drug use patterns involving cocaine among 173 heroin addicts enrolled in a methadone treatment program at the Philadelphia General Hospital. Of the 173 patients, 32 were found to be consistent multiple users of methadone and cocaine. The incidence of cocaine abuse was found to be greater among older addicts (over 35 years of age) and among black patients. Narcotic addicts who abused cocaine were also found to be more likely to be divorced or separated than the nonabusers. In addition, cocaine abusers had longer drug abusing careers and were less likely to be gainfully employed at the time of admission to the methadone treatment program. (23 references)

48. **Chambers, Carl D.; Taylor, W.J. Russell; and Walter, Peter V. Drug abuse during ambulatory detoxification.** In: Chambers, C.D., and Brill, L., eds. *Methadone: Experiences and Issues.* New York: Behavioral Publications, 1973. pp. 203-213.

Urine surveillance for drug abuse was conducted over a 1-month period among 65 heroin addicts enrolled in an ambulatory detoxification treatment program which employed decreasing doses of methadone. The 65 addict-patients were separated into three groups based on the stage of detoxification: 40, 30, and 20 mg./day of methadone. Addict-patients at the initiation stage of detoxification (e.g., 40 mg. of methadone a day) were found to abuse heroin 64.1

percent of the time. Addict-patients at the middle stage (30 mg./day) abused heroin 39.4 percent of the time, and addicts at the later stages of detoxification (20 mg./day) abused heroin 34.3 percent of the time. Similar decreases were noted in the abuse of amphetamines. Those patients receiving 40 mg. of methadone were abusing amphetamines 17.2 percent of the time, while those who were receiving 20 mg. of methadone abused amphetamines only 6.0 percent of the time. In contrast to other studies of similar population groups, multiple drug abuse involving narcotics and barbituates was virtually nonexistent in these patients. The most predominant form of multiple drug abuse among these patients involved heroin, amphetamines, and cocaine.

49. **Richman, Alex; Jackson, George W.; and Trigg, Harold L. "In-patient treatment of methadone maintenance patients who are abusing other substances."** Presented at the Thirtieth International Congress on Alcoholism and Drug Dependence, Amsterdam, the Netherlands, September 4-9, 1972. 3 pp. (Mimeo.)

Nine percent of 3,800 patients enrolled in New York City methadone maintenance programs for less than a year were reported by their counselors to be using other drugs (excluding alcohol), and 8 percent were using alcohol. The abuse of alcohol and other drugs, primarily barbiturates and amphetamines, were the principal reasons for the discharge of 718 methadone maintenance patients from programs in New York. The authors report on their treatment experiences with methadone maintenance patients admitted to the inpatient ward of the Morris J. Bernstein Institute. Of the 314 multiple drug abusers seen, 132 abused combinations of narcotics and alcohol, while 147 abused combinations of narcotics and barbiturates. Combined stimulant-narcotic abuse was seen in an additional 35 cases. The multiple drug abusers involved with barbiturates remained in the hospital ward longer than either the alcohol or stimulant abusers. Three-fifths of the patients received medical discharges; no significant differences in discharge type were apparent. At 6 months after discharge from the inpatient ward, 77 percent of the alcohol patients and 58 percent of the barbiturate multiple drug users were still enrolled in some methadone maintenance program. The authors suggest that the therapeutic value of long-term residence in a therapeutic community for the multiple drug abusing methadone maintained patient would seem to warrant urgent and clinical trial.

50. **Stimmel, Barry; Lipski, Janet; Swartz, Mark; and Donoso, Ephraim. Electrocardiographic changes in heroin, methadone and multiple drug abuse: A postulated mechanism of sudden death in narcotic addicts.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 706-710.

Electrocardiograms (ECG's) were obtained from 95 asymptomatic individuals who were either: (1) enrolled in a methadone maintenance program and abusing multiple drugs, including alcohol; or (2) applicants to a methadone program who had not yet initiated therapy and who abused no other drugs besides heroin. In addition, ECG's of 32 persons matched for ethnic background and free of cardiovascular, pulmonary, and renal diseases were obtained from a routine employee health screening clinic. None of the individuals in this third group had a history of drug abuse. ECG alterations were noted in 27 out of 41 (6.58 percent) of the multiple drug abusing group. Repolarization abnormalities consisted of QTc prolongation in 14 (34 percent), prominent U-waves in 13 (31 percent), and T-wave abnormalities in 12 (29 percent). Bradycardias were noted in 13 (31 percent) of the multiple drug group, with three patients having premature atrial or ventricular systoles. First degree heart block and intra-atrial conduction defects were seen in two instances. Of the 54 patients in the heroin-only group, 33 (61 percent) were found to have alterations in the ECG. Prolongation of QTc was the most frequent abnormality. After four or more months on methadone maintenance, ECG's were repeated for 22 of these heroin-only patients. Prolongation of QTc initially seen in 13 persons was not present on the repeat ECG in 7. Four of the patients who continued to abuse multiple drugs sporadically, including alcohol, had QTc prolongations on repeat ECG's which were not present initially. (9 references)

51. **Taylor, W. J. Russell; Chambers, Carl D.; and Dembo, Richard. Cocaine abuse among methadone maintenance patients.** In: Keup, W., ed. *Drug Abuse. Current Concepts and Research.* Springfield, Ill.: Charles C. Thomas, 1972, pp. 313-327.

Increasing evidence of widespread cocaine abuse among methadone maintenance patients prompted the authors to develop a simple and reliable urine screening method to separate cocaine from methadone during the thin-layer chromatographic process using cation exchange paper. This procedure permitted the monitoring of 173 methadone maintenance patients for multiple abuse of cocaine and narcotics at the Philadelphia General Hospital methadone treatment program. Of these patients, 18.5 percent (N = 32) were found to be abusing cocaine concomitant with methadone. In general, the cocaine cheaters were older, more likely to be black, less likely to be single or married, and less likely to have maintained steady employment at the time of enrollment in the methadone program. The majority of cocaine multiple drug abusers had been stabilized at daily methadone doses of at least 100 mg. In addition to the cocaine cheating, 84.2 percent of the patients were found to have cheated with heroin, 60.8 percent with amphetamines, and 32.2 percent with barbiturates. Cocaine cheaters were less likely to supplement their methadone dosage with illicit methadone, but were more likely to use heroin, amphetamines, and barbiturates. (23 references)

52. **Wieland, William F. Some psychosocial aspects of barbiturate and amphetamine use during methadone maintenance.** In: Goldstein, A., ed. *Fourth National Conference on Methadone Treatment.* Proceedings. New York: NAPAN, 1972. pp. 145-146.

Multiple drug use is a well-documented phenomenon among heroin addicts and methadone maintenance patients. Some characteristics of this type of drug using pattern are delineated in a discussion of three informal studies of amphetamine-barbiturate multiple drug abuse among methadone patients at the West Philadelphia Mental Health Consortium program. Multiple drug abusers who employed barbiturates were found to have lower employment rates, higher single or divorce rates, and higher rates of continued dependency upon parents than typical methadone maintenance patients. In addition, 50 percent of this group expressed a negative attitude towards barbiturates, usually accompanied by feelings of self-degradation. The employment rates and single or divorce rates of the multiple drug abusers who employed amphetamines were higher than those of the general clinic population but lower than those of the multiple drug abusers who used barbiturates. The amphetamine group showed a slight trend toward more disturbed family relationships, but, overall, was seen as a more heterogeneous and less pathological group than the barbiturate abusers. (3 references)

METHADONE-ALCOHOL POLYDRUG USE

53. **Bihari, Bernard. Alcoholism in M.M.T.P. patients: Etiological factors and treatment approaches.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 288-295.

A growing proportion of the methadone maintenance patients admitted to the Bernstein Institute Drug Addiction Service in New York City (currently 40 percent) are addicted to alcohol as well as heroin or other narcotics. Three general groups of patients who are dually dependent upon alcohol and narcotics are delineated: (1) patients with the range of psychotic illnesses seen in the nondrug dependent population who use alcohol and other substances as antipsychotic medications; (2) patients with ordinary situational or adjustment reactions, mild personality problems and psychosocial problems without severe psychopathology who abuse alcohol moderately (2 to 6 pints of wine per day); and (3) patients who display a distinct psychiatric syndrome consisting of psychomotor restlessness, short attention span, a very low tolerance for frustration and inability to delay gratification. These patients often become severely alcoholic rapidly and drink massive amounts in what may be an effort to completely blot out consciousness. Management of these patients is an extremely difficult and complex problem and needs to be carried out in settings which are programmatically distinct from those designed for the majority of addicts. In addition, their problems and needs are equally seen as being different from those of most alcoholics, so that the treatment approaches utilized in alcoholism treatment programs are inappropriate as well. (3 references)

54. Liebson, Ira; Bigelow, George; and Flamer, Ronald. Alcoholism among methadone patients; a specific treatment method. *American Journal of Psychiatry,* 130(4):483-485, April 1973.

The methadone literature indicates that as many as 20 percent of unselected patients going on methadone may become problem drinkers. The authors suggest that methadone treatment itself, perhaps by virtue of its psychopharmacologically, socially, and legally stabilizing effects, may be precipitating alcoholism in many individuals. Because of this increasing trend, the authors believe more attention should be paid to treatment modalities for patients dually dependent upon methadone and alcohol. One such modality, utilized with six patients in a pilot program, involves the administration of methadone (a powerfully reinforcing chemical) contingent upon the patient's willingness to take disulfiram (an alcohol antagonist). Although most of the patients were reluctant to take disulfiram, they all preferred this treatment to discharge from methadone maintenance. In the case of two patients, it was necessary to begin narcotic detoxification before they would accept disulfiram. The preliminary results of this study indicate that at least over a short-term period, drinking by alcoholic-narcotic addicts can be arrested by disulfiram when their maintenance on methadone is made contingent on their willingness to take disulfiram. (10 references)

55. Pascarelli, Emil F. Disulfiram (Antabuse) in the treatment of methadone maintenance alcoholics. In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 316-323.

The possibilities of the use of disulfiram (Antabuse) in the management of patients dually addicted to alcohol and methadone are examined. In a pilot program, a regimen of disulfiram therapy was begun in a group of alcoholic methadone patients prior to hospitalization for the purpose of detoxification from alcohol. Methadone dosages were left intact, and patients were urged to maintain and intensify contacts with counselors, peer group members, and physicians, all of whom explained and reinforced the concepts of disulfiram therapy. Patient motivation was found to be a key factor in treatment success; even those patients who were at least willing to try disulfiram seemed to do better than those who were unwilling. Some of the factors associated with poor prognosis included: age less than 40, a history of blackouts, chronic depression, and low social stability. The author recommends the simultaneous administration of methadone and disulfiram (in crushed tablet form, mixed with the methadone solution) under direct supervision of treatment personnel. Although preliminary treatment results of the program at the Roosevelt Hospital with alcoholic methadone patients have been encouraging, the author notes that followup for at least a year is necessary before efficacy can accurately be measured. (36 references)

56. Richman, Alex; Jackson, George; and Trigg, Harold. Follow-up of methadone maintenance patients hospitalized for abuse of alcohol and barbiturates. In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 1484-1493.

During the 10-month period from January 1 to October 31, 1971, 309 methadone maintenance patients were admitted to the Morris J. Bernstein Institute for management of mixed dependencies on alcohol and/or barbiturates and miscellaneous substances. Alcohol was a major abuse problem for 128 of these patients, while 146 were dependent upon barbiturates, and 35 were habituated to glutethimide, cocaine, or amphetamines. Most of the patients (53 percent) had been enrolled in methadone maintenance treatment programs (MMTP) for less than 12 months. Among these recent entrants to MMTP, the majority (57 percent) were using barbiturates, while of those in treatment over 1 year, most (57 percent) were abusing alcohol. The alcohol abusers were generally older than the average MMTP patient, while the barbiturate abusers were younger. Patients dependent upon alcohol were detoxified with oral paraldehyde and, occasionally, phenobarbital. Those dependent upon barbiturates were detoxified with decreasing doses of sodium secobarbital. All patients were maintained on their usual dosages of methadone, unless medical conditions dictated changes. In general, the barbiturate abusers were hospitalized for longer periods than were the alcoholics. Three-fifths of the patients received medical discharges. At 6 months after discharge, 80 percent of the alcohol abusers were still active in MMTP, compared to only 61 percent of the barbiturate abusers. Twelve months

after discharge, 69 percent of the alcholics, and 61 percent of the barbiturate abusers, were still enrolled in methadone treatment programs. (6 references)

57. **Rosen, Alvin; Ottenberg, Donald J.; and Barr, Harriet L. Patterns of previous abuse of alcohol in a group of hospitalized drug addicts.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 306-315.

Data gathered from interviews with 183 male narcotic addicts admitted to the treatment program at the Eagleville Hospital and Rehabilitation Center revealed that only 5 percent considered themselves to not be significantly involved with alcohol. Of the remainder, 32 percent admitted to being social drinkers, and an overwhelming 68 percent were considered to be alcohol abusers. This latter group includes a substantial number (47 percent) who lessened and eventually discontinued alcohol abuse as they progressed more deeply into drug dependency, and others (21 percent) who continued to abuse alcohol concomitantly with the abuse of other drugs. The first illegal substance used by 89 percent of the drug addicts studied was alcohol. In about half of the patients, had intervention occurred at an earlier age, the diagnosis would have been alcoholism or alcohol abuse instead of narcotics addiction. This phenomenon, the authors assert, has implications for the prevention of heroin addiction, considering the fact that at the time of alcohol abuse, dependence on heroin had not yet developed. Although not all young alcohol abusers go on to abuse other drugs and develop heroin addiction, the authors believe that the development of criteria that are useful in the identification of those that do is of utmost importance. (4 references)

NARCOTICS AND POLYDRUG USE

58. **Cheek, Frances E.; Newell, Stephens; and Sarett, Mary. The down-head behind an up-head. The heroin addict takes LSD.** *International Journal of the Addictions,* 4(1):101-119, March 1969.

Narcotic addicts hospitalized at the New Jersey Neuro-Psychiatric Institute Drug Addiction Treatment Center were interviewed concerning their experiences with lysergic acid diethylamide (LSD-25). Out of a total of 772 addicts who were admitted to the center between June 15, 1965, and July 18, 1967, the authors were able to identify 35 who had experimented with LSD. An additional 18 narcotic or barbiturate addicts who had admitted LSD use were inadvertently excluded from the study. Further, 10 addicts out of the original cohort of 35 were not interviewed due to administrative difficulties and early discharges. Confirming previous observations, the actual experiences of these addicts under LSD appeared to be quite similar to those reported by other groups. However, the authors found the majority of the addicts neutral or negative in their evaluations of the experience, despite some reports of apparently positive changes in their views of themselves and others. A possible explanation for the negative attitudes of the addicts toward LSD was suggested by some further observations with regard to social class differences in the addict and psychedelic groups which could be associated with a differential interest in the use of "down-head" vs. "up-head" drugs. (5 references)

59. **Cushman, Paul. Hyperimmunoglobulinemia in heroin addiction: Some epidemiologic observations, including some possible effects of route of administration and multiple drug abuse.** *American Journal of Epidemiology,* 99(3):218-224, March 1974.

Epidemiological and clinical features of hyperimmunoglobulinemia in heroin addiction were studied in 250 cases in New York City, 131 in Washington, D.C., 36 in Tucson, and 7 in Honolulu. The frequency with which increased serum IgG levels was found was similar in all groups studied. Increased serum IgM was found in about 75 percent of the New York addicts, 41 percent of the Washington, D.C. addicts, 25 percent of the Tucson addicts, and 57 percent of the Honolulu addicts. Demographic and clinical differences between the groups may have contributed to the different frequencies of increased serum IgM. The route of heroin administration was significant since patients who seemed to have used only intranasal heroin had generally normal serum

IgM levels. Concomitant use of barbiturates, cocaine, and amphetamines (multiple drug abuse), when recognized, did not appear to be a factor in hyperimmunoglobulinemia. Since the diluents used in the eastern seaboard cities differed significantly from those in use in Arizona, the finding of hyperimmunoglobulinemia in both regions makes it unlikely that the diluents were a significant factor. Reduction in serum IgM abnormality was associated with methadone maintenance treatment in some patients. (11 references; author abstract modified)

60. Langrod, John. Secondary drug use among heroin users. *International Journal of the Addictions,* 5(4):611-635, December 1970.

The nature and extent of multiple drug abuse among heroin addicts was studied in a group of 422 male patients from 6 different treatment programs in New York City. The following substances were found to be involved in multiple abuse patterns with these subjects (in order of preference): cannabis, cocaine, hashish, barbiturates, amphetamines, methadone, morphine, methamphetamine, commercial solvents, LSD, opium, and Demerol. Nine percent of the 422 heroin addicts had used only one additional drug, 36 percent had used from two to three substances, 27 percent had used four or five drugs, and 28 percent used six or more different supplementary drugs. Those with extensive multiple drug abuse patterns (six or more drugs) were more likely to mainline their drugs than were those who displayed more moderate multiple drug use. Most of the subjects were not significantly involved in heavy multiple drug abuse until after the onset of heroin addiction. Blacks were found to be more likely to employ cocaine as a secondary drug, while whites were more likely to abuse amphetamines and LSD. Multiple drug abuse involving LSD, airplane glue, and amphetamines seemed to be a relatively recent phenomenon, which was not engaged in by the older addicts in the sample. (23 references)

61. Langrod, John. Multiple drug use among heroin users. In: Brill, L., and Harms, E., eds. *Yearbook of Drug Abuse.* Morningside Heights, New York: Behavioral Publications, 1973. pp. 303-332.

Data collected from interviews with 422 New York City heroin addicts indicate that multiple drug abuse is a most common phenomenon among heavy narcotics users. Cannabis is the most popular secondary drug; it is employed by 92 percent of the subjects interviewed. Other drugs used, in order of preference, were: cocaine, hashish, barbiturates, amphetamines, methadone, morphine, methedrine, airplane glue, LSD, opium, and Demerol. The use of secondary drugs, especially other opiates, barbiturates, and amphetamines is closely related to the use of heroin and stops, in a high proportion of cases, when heroin addiction is successfully controlled. The author, therefore, suggests that those patients who continue using other drugs upon cessation of heroin may be doing so because of deeper emotional problems. Those addicts who began their drug-taking careers with cannabis were found to be more mildly involved in multiple drug abuse than those who started with heroin or other powerful drugs. White narcotic addicts were found to be much more likely than either Puerto Ricans or blacks to abuse a large number of secondary drugs. In this regard, whites are more likely than blacks or Puerto Ricans to have used all secondary drugs (except cocaine) more than 6 times. (23 references)

62. Lerner, A. Martin, and Oerther, Frederick J. Recent trends in substance abuse. Characteristics and sequelae of paregoric abuse. *International Journal of the Addictions,* 2(2):312-327, Fall 1967.

Paregoric is a camphorated opium tincture containing 4 percent opium (0.04 percent morphine), benzoic acid, camphor, and anise oil. During the period from 1956 to 1965, the authors noted a sharp increase in a pattern of multiple drug abuse involving stronger narcotics and paregoric. The epidemic reached a peak in 1963 when the number of known paregoric users rose to 713, and the number of known heroin-only users declined to 281 (from 1,267 in 1956). Most of the paregoric users had previously restricted their drug intake to heroin. However, with the onset of this new drug-taking pattern, most addicts became multiple abusers of paregoric, barbiturates and amphetamines. Frequently, paregoric was boiled to dryness and reconstituted with a small amount of water; amphetamine, secobarbital, glutethimide and/or tripelennamine tablets were crushed, dissolved in water, and added to the paregoric distillate prior to intravenous injection. Because benzoic acid, camphor, and anise have limited solubilities and are irritants, most of the multiple drug abusers seen by the authors preferred larger blood vessels, including the femoral,

popliteal, axillary, and jugular veins. Complications of self injection were rampant among these multiple drug abusers and included: virus hepatitis, septicemia, bacterial endocarditis, and abcesses at injection sites. Most multiple drug abusers gave up the practice of injecting paregoric and other substances when the former was removed from the list of exempt narcotics in 1964. (23 references)

63. Lipski, Janet; Stimmel, Barry; and Donoso, Ephraim. The effect of heroin and multiple drug abuse on the electrocardiogram. *American Heart Journal,* 86(5):663-668, November 1973.

The electrocardiograms (ECG) of 75 asymptomatic individuals admitted to a methadone treatment program were analyzed to determine the effect of street heroin and multiple drug use on the cardiovascular system. All patients were free of cardiac, renal, or pulmonary disease and had no laboratory abnormalities. Two groups of patients were studied. In group I, there were 34 patients on heroin only, which was taken within 24 hours of the ECG. Abnormalities were noted in 55 percent of these subjects. QTc prolongation was found in 19 percent, and significant bradyarrhythmias were found in 19 percent. In group II, there were 41 patients on methadone maintenance who also displayed patterns of polydrug abuse. Abnormalities were found in 66 percent of these subjects. QTc prolongation was noted in 34 percent, prominent U-waves in 32 percent, and bradyarrhythmias were found in 32 percent. The authors claim that the sudden death syndrome in addicts may not be a pharmacologic or dosage-related phenomenon. The existence of conduction, depolarization, and repolarization abnormalities, as well as bradyarrhythmias in a significant number of multiple drug-dependent individuals may play a role in the production and facilitation of lethal arrhythmias and may be the mechanism of the acute fatal reaction. (25 references; author abstract)

64. Merry, Julius. Glue sniffing and heroin abuse. *British Medical Journal,* II:360, May 6, 1967.

A case of a young adult male who displayed chronic, heavy multiple dependence upon heroin, Drinamyl (a combination of dexamphetamine and amobarbital), cannabis, phenmetrazine, and airplane glue is presented. Just prior to admission to St. Thomas's Hospital (London) in an unconscious state, the patient had self-injected 64 mg. of heroin while simultaneously sniffing an unknown quantity of plastic cement. Shortly after admission the patient became jaundiced; laboratory findings, however, were largely within normal limits, and he made an uneventful recovery. Within one month the patient discharged himself, but in a few days reverted to the abuse of glue and other drugs. He was admitted in an intoxicated state once again; laboratory tests showed SGOT and SGPT at 22 and 40 units respectively, while routine liver function tests were within normal limits. (3 references)

65. Retsas, S. Insulin abuse by a drug addict. *British Medical Journal,* IV(5843):792-793, December 30, 1972.

A case is presented of a 19-year-old narcotics addict who was a multiple abuser of several substances, including insulin. Ten hours prior to hospital admission in an unconscious state, he had injected himself intravenously with 2 ml. of insulin of unknown strength; the drug had been obtained from a diabetic friend. On arrival at the hospital casualty department, the patient was given a stomach washout; soon afterwards he again became unconscious and developed a major epileptic fit for which he was given 10 mg. of diazepam intravenously. On the evidence of the epileptic fits, profuse perspiration, and extensor plantar response, hypoglycemic coma was diagnosed. The blood sugar level was 30 mg./100 ml., and 50 ml. of 50 percent dextrose was injected immediately. Within 10 minutes the patient regained consciousness and recovered in an unremarkable fashion. It is suggested that hypoglycemic coma in deeply comatose drug addicts (and multiple drug abusers) as a result of insulin overdose should be considered in the differential diagnosis. (5 references)

66. Swanson, David W.; Weddige, Richard L.; and Morse, Robert M. Hospitalized pentazocine abusers. *Mayo Clinic Proceedings,* 48(2):85-93, February 1973.

The records of 30 patients who abused pentazocine and who were seen between July 1, 1968, and June 30, 1972, at the St. Mary's Hospital Psychiatric Inpatient Service (Rochester, Minnesota), were examined as a part of a larger study concerning abuse of prescription medications. The overwhelming majority of these patients did not confine their drug-taking

activities to pentazocine; multiple drug abuse, commonly involving three or more substances, was the rule. Side effects and toxicity were apparently minimal despite the concomitant use of other drugs. Drowsiness was reported by 17 patients, unsteadiness by 6, and 4 complained of confusion. Upon admission, ten patients (33 percent) were noted to have brawny, woody induration of skin and subcutaneous tissue at the site of intramuscular injection. No withdrawal phenomena were observed in 11 patients (37 percent). Among the remainder, withdrawal features were mild. The abuse of several drugs by two-thirds of the patients, in addition to the pharmacotherapy during the withdrawal period, made it difficult to attribute specific withdrawal symptoms to pentazocine. The most common complaints were restlessness (in 47 percent), mild gastrointestinal symptoms (in 40 percent), autonomic discomfort (in 20 percent), and delirium in 6 percent. (19 references)

67. **Taintor, Zebulon, and D'Amanda, Christopher. Multiple drug abuse in heroin addicts receiving outpatient detoxification.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 1002-1009.

A study of 288 patients enrolled in an outpatient detoxification program for narcotic addiction revealed a high incidence of multiple drug abuse. Most of the patients (80 percent) had abused prescription drugs (the most popular of which was glutethimide) prior to becoming dependent upon heroin. With the advent of heroin addiction, they nevertheless persisted in concomitant self-administration of a variety of substances, including: cannabis (used by 30 percent), glutethimide (used by 27 percent), cough medicines (used by 8 percent), Tuinal, amphetamines, glue, secobarbital, and cocaine (all abused by about 3 percent). The consumption of alcohol was quite common in this group of patients; 16 percent drank daily, 18 percent drank from two to three times per week, 6 percent drank only on weekends, 25 percent drank once a month, and 26 percent were abstainers. Thirty percent of the patients who began the detoxification program failed to complete it. The most frequent causes of termination were failure to report for treatment, or detection of heroin in the urine. During the course of treatment, multiple abuse patterns involving amphetamines, barbiturates and sedatives were relatively uncommon, occurring about 10 percent of the time. However, at the six-month followup most patients were found to have reverted to a pattern of multiple abuse of illicit drugs (including heroin). (12 references)

NARCOTICS-ALCOHOL POLYDRUG USE

68. **Jackson, George W., and Richman, Alex. Alcohol use among narcotic addicts.** *Alcohol Health and Research World,* 1(1):25-28, Spring 1973.

The authors present a systematic procedure developed at the Morris J. Bernstein Institue for assessing the psychological, social and addiction characteristics of narcotic addicts. The procedure includes a self-administered questionnaire which measures the extent of multiple drug use and alcohol abuse in this population. Of 471 consecutive heroin addicts admitted to the Institute's detoxification program, 27 percent acknowledged daily alcohol abuse. Most of the 129 alcohol abusers drank fortified wine, averaging 4 pints per day. No significant difference in alcohol use patterns could be seen between male and female addicts, but alcoholism was found to be significantly more prevalent among older addicts (35 years of age or more). Spanish-speaking addicts used alcohol on a daily basis less (20 percent), and blacks drank more frequently (34 percent). Nearly one-half (46 percent) of the addicts used other substances on a daily basis in addition to heroin, or heroin and alcohol. Alcohol abuse was less prevalent (13 percent) among heroin addicts who were not multiple drug abusers; those who used glutethimide, barbiturates, amphetamines, and/or cocaine on a daily basis were much more likely to be abusers of alcohol (44 percent). The daily use of alcohol was found to be closely associated with the number of years that the individual had been addicted to heroin. Daily alcohol abuse progressively increased from 7 percent of those addicted 2 years or less to 46 percent among those addicted more than 15 years. The authors conclude that it is essential that clinical programs focus on

alcohol and multiple drug abuse as major problems in the treatment and rehabilitation of heroin addicts. (9 references)

69. **Mattison, J.B. A case of double narcotic addiction. Opium and alcohol. Imbecility, recovery.** *Canada Lancet,* 17:101-104, December 1884.

A case is presented of a 34-year-old woman who became iatrogenically addicted to intravenous morphine following a major surgical procedure which necessitated a long and painful recovery. Her condition had steadily deteriorated and was complicated by an inordinate use of brandy, of which she took from 12 to 16 ounces daily. The patient suffered from delusions, visual hallucinations, marked anorexia, and delirium. Prior to detoxification from morphine and alcohol, the patient was administered a mild mercurial. No alcohol was allowed from the onset of treatment, and the patient's dose of morphine was gradually decreased, and finally terminated, within the course of a week. Large doses of Indian hemp (cannabis, marihuana) were then administered to facilitate sleep. Within 2 weeks the patient began to show marked improvement; the delusions lessened and hallucinations became infrequent. After 6 weeks, the patient's physical and mental status had returned to normal.

70. **Schut, Jacob; File, Karen; and Wohlmuth, Theodora. Alcohol use by narcotic addicts in methadone maintenance treatment.** *Quarterly Journal of Studies on Alcohol,* 34(4):1356-1359, December 1973.

The incidence and patterns of alcohol consumption among narcotics addicts attending an outpatient methadone clinic in Philadelphia were studied via structured interviews. The patients included in the study comprised 100 out of an enrollment of 890; rigorous sampling procedures were employed to ensure the representativeness of the sample. Of the 100 addicts interviewed, 97 had used alcohol prior to first drug use; the period of heaviest alcohol abuse corresponded to initiation into illicit drug use for roughly half (49 percent) of the patients. Heavy drinking was found to decrease following the development of a pattern of daily narcotics use; more than half of the addicts (52) reported that they abstained from alcohol after starting heroin use, and 40 percent reported a significant decrease in alcohol consumption. After an average of 18 months of methadone treatment, however, only 38 of the patients still did not use alcohol; 20 reported drinking more or much more than previously. Many patients reported use of alcohol as a euphoriant since methadone does not provide a "high" and blocks most euphoric effects from further heroin injections. The most numerous reports of excessive alcohol use were made by patients who were beginning to withdraw from methadone. The authors conclude that further research is needed to ascertain the psychological and physical interactions between long-term, concomitant use of alcohol, methadone, and other narcotics.

71. **Scott, Neil R.; Winslow, Walter W.; and Forman, David G. Epidemiology of alcoholism in a methadone maintenance program.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 284-287.

Over the past 4 years, the staff of the La Llave Drug Treatment Program (Albuquerque, New Mexico) has noted evidence of increasing rates of alcoholism among heroin addicts admitted to methadone maintenance. In mid-December 1972, the authors conducted a prevalence study of alcoholism among a 20 percent (N = 120) random sample of 600 active narcotic addict patients. Evidence of alcoholism and demographic data were collected from treatment program records, and files maintained at the county hospital and the local alcoholism treatment center. Eighty-four percent of the patients studied were Mexican-American, 14 percent were Anglo-American, and 2 percent were black. The data gleaned from this epidemiological investigation indicated that, while only 5 percent of the patients were alcoholics at time of admission to methadone maintenance, some 25 percent (N = 30) were classified as alcoholics after 15 months of participation in treatment. Further, among a small group of patients who had been enrolled in treatment for 4 years (N = 32), the incidence of alcoholism increased to an alarming 34 percent. The authors conclude that alcoholism is the major health complication of methadone maintenance among narcotics addicts and that it largely develops following program admission. (3 references)

72. **Stimmel, B.; Vernace, S.; and Tobias, H. Hepatic dysfunction in heroin addicts: Alcohol versus viral etiology.** *Gastroenterology,* 60(4):754, April 1971.

A group of 46 heroin addicts was studied to evaluate the importance of alcohol versus viral hepatitis in the development of chronic liver disease. In addition to the standard means of evaluating liver function, hepatitis associated antigen (HAA), and antibody (HAAAB), titers were determined by radioimmunoassay. Liver biopsies were determined in patients with negative titers to HAA or HAAAB with persistent abnormal liver function tests. Twenty out of 46 patients had positive titers for either HAA or HAAAB, a higher incidence than previously reported by other methods. Of the 26 patients with insignificant titers by radioimmunoassay, 21 had a past or present history of liver disease and 14 had persistent abnormalities in liver function. Liver biopsies were obtained in these patients 1 year after complete abstinence from heroin as verified by paper chromatography of the urine. In 10 out of the 14 biopsies, hepatic injury related to alcohol could be demonstrated. All 14 of these patients admitted to large quantity alcohol intake. In addition, 85 of 100 patients admitted to a methadone treatment program gave a history of a prior prolonged period of consumption of significant amounts of alcohol. Alcohol injury, in addition to viral hepatitis, may play an important role in the chronic liver disease seen in heroin addicts and may be responsible for the persistence of abnormal liver function in addicts maintained on methadone in the absence of heroin use. Liver biopsy is the only method of ascertaining this diagnosis with certainty. (Journal abstract modified)

73. **Stimmel, Barry; Vernace, Salvatore; and Tobias, Hellel. Hepatic dysfunction in heroin addicts: The role of alcohol.** *Journal of the American Medical Association,* 222(7):811-812, November 13, 1972.

Hepatic dysfunction in 46 heroin users who were admitted to a methadone maintenance program (MMP) was evaluated over a period of 1 year with the use of conventional liver-function tests, radioimmunoassay of hepatitis associated antigen (HAA) and antibody (HAA AB), and biopsy of the liver. On admission, 21 patients (44 percent) had significant titers of HAA or HAA AB. Fourteen of the remaining 25 patients with negative results of HAA and HAA-AB assay had persistently abnormal results for liver function tests. Liver biopsies in 10 of 12 of these patients showed histological evidence of alcoholic liver disease. Eighty-five percent of patients entering the MMP gave a history of high alcohol consumption while taking heroin. The high frequency of an alcoholic history among the heroin users studied and the finding of histological evidence of alcoholic liver injury indicate that alcohol may play a significant role in the cause of chronic liver disease seen in heroin addicts. (20 references; author abstract modified)

74. **Westermeyer, Joseph. Use of alcohol and opium by the Meo of Laos.** *American Journal of Psychiatry,* 127(8):1019-1023, February 1971.

Data on patterns of alcohol and opium use among Meo tribal people in 14 Laotian villages during the years 1965 to 1967 are presented. The Meo consume alcohol in the form of a strong whiskey distilled from rice or corn mash. Each household produces its own supply and social imperatives strictly regulate when alcohol is drunk, by whom, and in what amount. All drinking seems to occur as a social activity within the nuclear family, extended family, or friendship group. Alcohol use is also closely integrated with other elements of the Meo culture, including: rites of passage, important extra-kin relationships, unpredictable crises and annual celebrations. Gross intoxication is culturally proscribed and if a Meo imbibes to the point of impaired speech, vision, or ambulation, he usually slips quitely away before his state is noticed by comrades. Despite widespread availability of alcohol among the Meo, nonsanctioned drinking and alcoholism are nonexistent phenomena. In contrast to alcohol, many Meo refuse to use opium for fear of becoming "one who enjoys opium." This nonuse category comprises 90.2 percent of the sample of 400 Meo villagers interviewed for this study. Of those Meo who do smoke opium, most are occasional users; their patterns of consumption range from a few pipes a week to smoking once every year or two. The context of opium use usually involves self-medication for sickness, or use to enhance relaxation after a hard spell of work. No withdrawal symptoms and no tendencies to increase dosage were noted among the opium users interviewed. Some habitual users, working addicts, and totally incapacitated addicts were, however, identified among the Meo. (18 references)

NARCOTICS-SEDATIVE POLYDRUG USE

75. Chambers, Carl D. Barbiturate-sedative abuse. A study of prevalence among narcotic abusers. *International Journal of the Addictions,* 4(1):45-57, March 1969.

Using voluntary admissions to the NIMH Clinical Research Center (Lexington, Kentucky), the authors compared the prevalence of hypnotic-sedative abuse among two groups of 100 addicts consecutively admitted during 1957 and 1966. Both groups represented similar demographic areas and, thus, had access to the same types of illicit drug-using subcultures. The data revealed that the incidence of barbiturate-sedative abuse among heroin addicts increased markedly between 1957 (when 39 percent of the heroin addicts abused hypnotics) and 1966 (when 54 percent admitted to multiple abuse of heroin and sedatives). Eighteen percent of the addicts in the 1957 group were diagnosed as dually addicted to heroin and sedatives. By 1966, however, 35 percent of the narcotic abusers were also addicted to barbiturates and/or sedatives. Between 1957 and 1966 the following increases in sedative abuse were noted in four major sex-race categories: from 48.0 percent to 56 percent among white males; from 52 to 56 percent among white females; from 28 to 56 percent among black males; and from 24 to 52 percent among black females. In both the groups, concurrent barbiturate-sedative abuse and opiate abuse was found to be associated with greater age and longer addiction careers. Concomitant abuse of sedative-hypnotics and narcotics was found to be greater among those addicts who were not heroin abusers. Pentobarbital was the drug of choice among members of the 1957 group, while glutethimide was most popular choice of members of the 1966 group. (9 references)

76. Chambers, Carl D., and Moldestad, Mary. The evolution of concurrent opiate and sedative addictions. In: Ball, J.C., and Chambers, Carl D., eds. *The Epidemiology of Opiate Addiction in the United States.* Springfield, Ill.: Charles C. Thomas, 1970. pp. 130-146.

Data from clinical records of narcotic-addict patients admitted to the Clinical Research Center (Lexington, Kentucky) between 1944 and 1966 reveal that the incidence of multiple drug abuse involving sedative-hypnotic drugs steadily increased from 8 percent (1944) to 54 percent (1966). Dual physiological addiction to narcotics and sedative-hypnotics showed a similar pattern of increase: only 1 percent of the narcotics addicts admitted in 1944 were also addicted to sedatives, compared to 5 percent in 1948, 18 percent in 1957, and 35 percent in 1966. Concomitant abuse of narcotics and sedatives was higher among whites up to 1957, but this pattern disappeared by 1966 as more and more blacks became multiple drug abusers. Between 1944 and 1957 pentobarbital (Nembutal) was the drug of choice among 77.2 percent of the multiple drug abusers. By 1966, however, the abuse of pentobarbital among opiate addicts had completely disappeared; in that year glutethimide (Doriden) was most frequently involved in multiple abuse patterns. Approximately two out of every three narcotic addicts who also abused sedative-hypnotics subsequently developed physiological addiction to the latter compounds.

77. Cumberlidge, Malcolm C. The abuse of barbiturates by heroin addicts. *Canadian Medical Association Journal,* 98:1045-1049, June 1, 1968.

Dual abusers of heroin and barbiturates are usually women or older men of European extraction who use barbiturates to potentiate the action of heroin, reduce awareness of heroin withdrawal symptoms, and obtain relief from various personality and interpersonal relationship problems. The majority of the sample studied started abusing heroin before abusing barbiturates. Only 33 percent believed that they would continue to use barbiturates (and then only occasionally) if they were able to obtain sufficient quantities of heroin. Almost without exception, the barbiturate preparation of choice was Tuinal (amobarbital plus secobarbital), which was taken orally in a daily mean dosage of about 36 grains. The multiple drug addicts interviewed in this study had a much poorer record of gainful employment than did addicts who were dependent solely upon heroin. The author asserts that barbiturate abuse is markedly more dangerous to the addict than is heroin abuse, particularly as far as lethal dose and severity of withdrawal are concerned. Because the sample chosen for this study was not a random one, the data are considered exploratory in nature. (9 references)

78. Hamburger, Ernest. **Barbiturate use in narcotic addicts.** *Journal of the American Medical Association,* 189(5):366-368, August 3, 1964.

The use of barbiturates by narcotic addicts was found to occur among 22.8 percent of narcotic addicts admitted to the U.S. Public Health Service Hospital in Lexington, Kentucky. An additional 9.6 percent of the narcotic addicts studied admitted to being formerly dependent upon sedative-hypnotics. No apparent relationship between the type of narcotic used and barbiturate use was discovered. However, a definite relationship was found between race and barbiturate use in these narcotic addicts: the white addict was found to be significantly more likely to be a concomitant abuser of barbiturates. Physical dependence on barbiturates may not cause obvious signs of intoxication because of the development of tolerance. The barbiturate intoxication and abstinence syndromes are discussed as necessary adjuncts to the evaluation of the barbiturate user. Gradual substitution reduction treatment using barbiturates was found to be effective in the treatment of the barbiturate abstinence syndrome. Patients with personality disorders, particularly those with inadequate and passive-dependent personalities, seem to constitute the bulk of multiple narcotics-barbiturate abusers. (8 references)

79. **James, I. Pierce. Withdrawal fits.** *Lancet,* I:244, February 3, 1968.

A case is presented of a heroin addict who displayed unexplained delirium, agitation, and mental depression within 2 to 4 days after hospital admission. He also developed serial fits and required transfer to an intensive care unit before they were brought under control. The attending physician later discovered that the heroin addict was dually addicted both to narcotics and sedatives and that the presenting syndrome was one of sedative withdrawal. The author concludes that the occurrence of otherwise unexplained fits or delirium should always be considered as a possible diagnosis of undisclosed multiple drug dependence. (4 references)

80. **Laskowitz, David. The phenomenology of Doriden (glutethimide) dependence among drug addicts.** *International Journal of the Addictions,* 2(1):39-52, Spring 1967.

Data on patterns of multiple drug abuse involving narcotic drugs and glutethimide among 14 patients at the Greenwich House Counseling Center (New York City) are presented. The group consisted of 10 males and 4 females all of whom were Caucasian with the exception of one black male and one Puerto Rican female. Two of the patients reported being introduced to glutethimide while hospitalized and an additional four first took the drug under a private physician's prescription. The remaining patients were introduced to glutethimide use by friends. The use of glutethimide by all 14 patients in this study was only a part of a multihabituation pattern, with an average of five other substances being employed concurrently. Several heroin addicts believed that combining glutethimide with heroin led to a more intense and prolonged "high," while others employed the drug for the relief of withdrawal symptoms from narcotics and/or barbiturates. Six out of the 14 patients in this group experienced no convulsions or related adverse physiological symptoms after abrupt withdrawal of the drug. The remaining eight suffered from convulsions, agitation, vomiting, sweating, ataxia, hot and cold spells, extensive itching, hiccups, and blackouts upon withdrawal. (10 references)

81. **Lusins, John; Klempner, William L.; and Rooney, Wallace C. The use of Doriden by young male heroin addicts.** *International Journal of the Addictions,* 8(5):847-851, 1973.

Alongside recent marked increases in the taking of heroin by young males, the authors have noted a similar increase in the tendency to self-administer a wide range of psychoactive substances. As a matter of fact, the New York City Medical Examiner's Office has reported that about half of the addicts who expire show significant blood levels of barbiturates, minor tranquilizers, amphetamines, and alcohol. Studies by the authors at the Rickers Island Hospital (New York City) indicate that the multiple, concomitant use of narcotics and glutethimide is becoming rather widespread among young male heroin addicts. Out of a total of 250 consecutive admissions to the narcotics treatment program, the authors discovered 81 individuals who admitted to multiple drug abuse involving glutethimide. The average heroin usage of this group was 11 bags per day, and their average length of addiction was 4 years. (7 references)

82. Mitcheson, Martin; Davison, James; Hawks, David; Hitchins, Laura; and Malone, Sarah. Sedative abuse by heroin addicts. *Journal of Psychedelic Drugs*, 4(2):123-131, Winter 1971.

Sixty-five heroin addicts attending one of three treatment centers in London were interviewed to determine the extent of their use of various hypnotics and sedatives. Multiple drug abuse was found to be the rule, rather than the exception, among these addicts: all used alcohol, cannabis, and narcotics and all but one used amphetamines, barbiturates, and other sedative-hypnotics. Three main reasons were given for employing sedative drugs: (1) in order to sleep; (2) in order to dull symptoms of narcotic withdrawal; and (3) for the euphoric effects produced by the sedatives themselves. Twenty-eight of the subjects obtained their first sedative drug from medical sources, 28 from illicit sources, and 6 from quasi-legitimate sources. Those who had obtained sedatives from illicit sources were more likely to be involved in heavy multiple drug using patterns. The majority of these multiple drug abusers preferred the intravenous route of administration and, consequently, shunned most oral preparations such as Mandrax (methaqualone plus diphenhydramine). The authors recommend tighter legal and administrative controls on the prescription and dispensing of sleeping preparations. (21 references)

83. Raynes, Anthony E.; Fisch, Alan; Levine, Matthew E.; McKenna, Gerald J.; and Patch, Vernon D. The heroin and barbiturate epidemics in Boston. In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 995-1001.

Data collected from the records of the Boston City Hospital Drug Detoxification Unit were used to analyze the epidemiology of concomitant heroin and barbiturate abuse in Boston from July 1970 to July 1972. Two hundred and twenty-three of the 400 patients reviewed (55 percent) had abused barbiturates. Among these, the frequency distribution of onset of barbiturate abuse shows an increase beginning in 1967 and reaching a peak in 1970. The sudden increased incidence of barbiturate abuse in 1967 seems to have begun just prior to the peak incidence of heroin abuse. The authors suspect that this may be a reflection of the frequent use of barbiturates by heroin addicts when heroin becomes scarce. In addition, the increasing incidence of barbiturate addiction may well represent a shift away from impure street heroin (which generally contains only about 1 percent diacetylmorphine) to pharmaceutical barbiturate preparations which are both potent and pure. (2 references)

SEDATIVES AND POLYDRUG USE

84. Inaba, Darryl S.; Gay, George R.; Newmeyer, John A.; and Whitehead, Craig. Methaqualone abuse. Luding out. *Journal of the American Medical Association*, 224(11):1505-1509, June 11, 1973.

According to the authors, during the past few years methaqualone has become a most popular drug of abuse in the United States. The drug is often a part of a multihabituation pattern involving alcohol and/or other sedative-hypnotic drugs. One case is presented involving a 19-year-old male who admitted concomitant use of methaqualone, heroin, codeine, alcohol, cannabis, and pentobarbital. The patient was enrolled in the Haight-Ashbury Free Clinic's outpatient drug detoxification program, where he was placed on a gradually decreasing schedule of phenobarbital dosages. A little over a year after discharge from the program, the patient began to use methaqualone heavily, primarily as a result of his belief that the drug was a nonaddictive "substitute" for barbiturates. However, physical dependence developed, and the patient was again enrolled in a detoxification and counseling program. At the time of this article's publication, he was able to control his methaqualone intake to a recreational, or weekend pattern. Another case is presented of a 21-year-old woman suffering from an overdosage of a combination of four to ten 300 mg. tablets of methaqualone with several alcoholic drinks. Because of a previous history of narcotics addiction she was given 1 ml. of naloxone HCl with no response. Administration of 3 ml. of doxapram (HCl (Dopram), however, did elicit a rapid response in respiratory rate and depth. Within 2 to 3 hours the patient regained a near-normal level of responsiveness and was discharged. (42 references)

85. **Smith, J. Rutherfoord. Sedativism. A syndrome of multiple addiction.** *Journal of the South Carolina Medical Association,* 69(10):363-366, October 1973.

A description of multiple addiction, described as sedativism, is presented by the author. If allowed to run its course, the author claims sedativism may either terminate in permanent neuropsychiatric damage or death. The treatment of the acute stage of sedativism (especially involving alcohol and barbiturate or nonbarbiturate sleeping medications) should be undertaken by an internist or generalist, not a psychiatrist. Detoxification should take place in a hospital, under the guidance of a competent physician rather than an amateur. If the physician is not familiar with detoxification or resents treating the recidivistic nature of the disease, he should refer the patient to one who is willing and able to accept such a responsibility. The complications of sedative-alcohol abuse can mimic almost any disease symptom, medical or psychiatric, and thus present an unparalleled challenge to the physician. Once detoxification is completed, the author recommends referral of the patient to the aftercare program of Alcoholics Anonymous.

STIMULANTS AND POLYDRUG USE

86. **Greene, Mark H., and DuPont, Robert L. An outbreak of intravenous amphetamine abuse in heroin addicts.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conference on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 776-785.

The authors present data which document the existence, nature, and termination of an epidemic of intravenous amphetamine abuse among heroin addicts in the District of Columbia. The primary drug being abused by heroin addicts was methamphetamine in tablet form (15 mg.). The drug was obtained primarily from a group of six physicians who wrote over 12,000 amphetamine prescriptions for nearly 550,000 tablets. The methamphetamine was typically injected intravenously by addicts in an effort to boost the "high" obtained from oral methadone or poor quality heroin. The spread of this multiple drug abusing pattern seemed to parallel a period of relative unavailability of good quality heroin on the Washington, D.C. street market. Despite widespread increases in intravenous methamphetamine administration, the authors were unable to document any significant increases in pathology among this group of multiple drug users. Only one death due to overdose of methamphetamine occurred during the course of the epidemic. In planning an intervention strategy for the epidemic, the authors focused on the source of the drug, rather than on the users. Their goal was the reduction of amphetamine availability to the lowest feasible level in the community, not the complete elimination of amphetamines. All efforts were made to avoid frightening the community with a new drug scare, and care was taken not to infringe upon the legitimate prescribing practices of physicians. (11 references)

87. **Schut, Jacob; File, Karen; Naglin, Barbara; and Wohlmuth, Theodora. Cocaine abuse during narcotic substitution therapy: Three years later.** In: DuPont, R.L., and Freeman, R.S., eds. *Fifth National Conferences on Methadone Treatment.* 1973 Proceedings. New York: NAPAN, 1973. pp. 985-989.

Analyses of urine tests on 913 narcotic-addict patients at the Narcotic Addiction Rehabilitation Program (Philadelphia, Pennsylvania) were sorted for positive identification of cocaine during the two-month period from August to September 1972. Positive identification of cocaine abuse was found in 104 (11.4 percent) of these addict patients. Demographic analyses disclosed that black male heroin addicts were more likely to be involved with multiple drug use; black females were also over-represented. White males were only 50 percent as likely to be involved with multiple abuse of cocaine and narcotics, while white females showed almost complete absence of cocaine abuse. Of the total of 104 cocaine abusers, more than two-thirds (69.1 percent) were multiple users of other drugs as well. The most popular concomitant use of additional substances involved barbiturates, amphetamines, and

cannabis. There is a tendency for younger patients to not use cocaine in combination with heroin; this difference, however, was not statistically significant. (9 references)

88. Zondek, L. Amphetamine abuse and its relation to other drug addictions. *Psychiatria et Neurologia,* 135(4/5):227-246, April-May 1958.

The history, physiological effects, therapeutic actions, toxicity, pharmacology, and abuse patterns of the amphetamines are reviewed. In addition, a review of the literature is undertaken, and a series of case histories are presented, to document the increasing trend towards multiple drug misuse among those who become involved with amphetamines. The most common multiple abuse patterns involve amphetamines in combination with depressants (such as barbiturates and/or alcohol). Such individuals suffer from serious withdrawal syndromes, often involving epileptiform fits and major convulsions. The author recommends that prescription of amphetamines and amphetamine-barbiturate combinations be restricted to certain well-defined syndromes, such as narcolepsy and some features of post-encephalitic Parkinsonism. (54 references)

AUTHOR INDEX

(By Citation Numbers)

Abeles, H., 6

Backhouse, C.I., 7
Bartholomew, A.A., 1
Berger, H., 44
Berle, B.B., 18
Bihari, B., 53

Carlin, A.S., 8
Chambers, C.D., 45, 46, 47, 48, 75, 76
Cheek, F.E., 58
Cohen, H., 30
Cohen, M., 9
Cumberlidge, M.C., 77
Cushman, P., 59

Dearden, M., 31
Devenyi, P., 25
Dodson, W.E., 10

Finkle, B.S., 26
Fisher, G., 32
Freed, E.X., 27
Freedman, A.M., 2

Gay, G.R., 19, 20
Goldstein, J.W., 33
Goode, E., 34
Greene, M.H., 86
Grupp, S.E., 35

Hamburger, E., 78

Inaba, D.S., 84

Jackson, G.W., 68
James, I.P., 79
Joyce, C.R.B., 36
Judd, L.L., 11

Kramer, J.P., 12
Kunnes, R., 3

Langrod, J., 60, 61
Laskowitz, D., 80
Lerner, A.M., 62
Lewis, J.M., 4
Liebson, I., 21, 54
Lipski, J., 63
Lusins, J., 81

Mattison, J.B., 69
McGlothlin, W., 37
McKenna, G.J., 22
Mellinger, G.D., 13
Merry, J., 64
Milman, D.H., 14, 15, 38
Mitcheson, M., 82
Mozdzierz, G.J., 28

Pascarelli, E.F., 55
Prendergast, T.J., 16

Raynes, A.E., 83
Retsas, S., 65
Richman, A., 49, 56
Rosen, A., 57

Schut, J., 17, 70, 87
Scott, N.R., 71
Singh, R.N., 42
Smart, R.G., 43
Smith, J.R., 85
Stimmel, B., 50, 72, 73
Strategy Council on Drug Abuse, 5
Swanson, D.W., 66

Taintor, Z., 67
Taylor, W.J.R., 51
Tec, N., 39

Wechsler, H., 29
Wesson, D.R., 23, 24
Westermeyer, J., 74
Whitehead, P.C., 40
Wieland, W.F., 52
Wilson, C.W.M., 41

Zondek, L., 88